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Thirteenth Biennial Report

**Oregon State Highway
Commission**

1937-1938



MT. HOOD AS VIEWED FROM THE MT. HOOD HIGHWAY IN
CLACKAMAS COUNTY

THIRTEENTH BIENNIAL REPORT

OF THE

Oregon State Highway Commission

For the Period July 1, 1936, to June 30, 1938



OREGON STATE HIGHWAY COMMISSION

HENRY F. CABELL, Chairman

E. B. ALDRICH, Commissioner

F. L. TOU VELLE, Commissioner

R. H. BALDOCK, State Highway Engineer

C. B. McCULLOUGH, Asst. State Highway Engineer

H. B. GLAISYER, Secretary

OREGON STATE HIGHWAY COMMISSION

Former Members and Terms

- E. J. Adams, Eugene, February 28, 1917, to March 31, 1918.
W. L. Thompson, Pendleton, February 28, 1917, to October 15, 1919.
S. Benson, Portland, February 28, 1917, to November 15, 1920.
R. A. Booth, Eugene, April 1, 1918, to May 28, 1923.
J. N. Burgess, Pendleton, October 16, 1919, to November 21, 1919.
E. E. Kiddle, Island City, November 26, 1919, to December 28, 1920.
J. B. Yeon, Portland, November 22, 1920, to March 31, 1923.
W. B. Barratt, Heppner, January 8, 1921, to March 27, 1923.
Wm. Doby, Baker, March 27, 1923, to July 31, 1927.
H. B. Van Duzer, Portland, April 1, 1923, to October 7, 1931.
W. H. Malone, Corvallis, May 28, 1923, to March 31, 1927.
C. E. Gates, Medford, April 1, 1927, to March 11, 1931.
Robert W. Sawyer, Bend, August 1, 1927, to May 28, 1930.
M. A. Lynch, Redmond, May 29, 1930, to August 1, 1931.
Chas. K. Spaulding, Salem, March 11, 1931, to February 16, 1932.
Wm. Hanley, Burns, August 1, 1931, to February 16, 1932.
J. C. Ainsworth, Portland, October 8, 1931, to February 16, 1932.
Leslie M. Scott, Portland, February 17, 1932, to March 31, 1935.
Carl G. Washburne, Eugene, February 17, 1932, to October 9, 1935.

Present Members

- Henry F. Cabell, Portland, appointed April 1, 1935.
E. B. Aldrich, Pendleton, appointed February 17, 1932.
F. L. Tou Velle, Jacksonville, appointed October 9, 1935.

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LETTER OF TRANSMITTAL

Salem, Oregon,
January 1, 1939.

HONORABLE CHARLES H. MARTIN,
Governor of the State of Oregon.

Dear Sir:

In compliance with the provisions of section 44-111, Oregon Code 1930, we have the honor of presenting to you the report of the Oregon State Highway Commission for the period from July 1, 1936, to June 30, 1938.

Respectfully yours,

OREGON STATE HIGHWAY
COMMISSION

HENRY F. CABELL, Chairman

E. B. ALDRICH, Commissioner

F. L. TOU VELLE, Commissioner

BIENNIAL REPORT
OF THE
Oregon State Highway Commission

Fiscal Years 1937 and 1938

INTRODUCTION

This report has for its purpose the presentation of such financial, statistical, and other data as are needed for an intelligent understanding of Oregon's highway problems. The period covered extends from July 1, 1936, to June 30, 1938, the fiscal biennium which has elapsed since the submission of the previous report. In addition to the statistical data covering this particular biennium, there are included certain factual data dating back to 1917, which year witnessed the inauguration of Oregon's roadbuilding program. Forecasts of probable revenues and requirements for the next biennial period and a discussion of certain basic taxation problems are also included. In certain cases the statistical tables have been reduced to a calendar-year basis in the interest of clarity.

The first section of this report contains the Commission's discussion of budgetary and other financial matters, while the second is the report of the State Highway Engineer.

Section three contains certain statistical compilations.

SECTION ONE

Budgetary and Financial Matters

Source of Funds for State Highway Improvement

The funds disbursed by the State Highway Commission for the construction, maintenance and operation of highways are derived from two general sources: (1) state funds, which consist principally of motor vehicle imposts; and (2) federal aid of various types and classes. In addition to the above, certain minor contributions in the form of county moneys and other miscellaneous cooperative funds are available for expenditure for highway purposes.

The state motor vehicle imposts consist of:

1. Motor vehicle license fees, which include both registration fees and drivers' license fees.
2. Motor fuel taxes.
3. Motor transportation fees.
4. Fines for traffic law violations.

In addition to the above, certain minor increments accrue to the state highway fund by virtue of interest on accounts receivable, county moneys, and other miscellaneous cooperative funds.

State incomes for highway purposes reached a maximum in the calendar year 1930, with a total of \$12,279,444. Owing to unfavorable economic conditions, and to the further fact that the legislature in that year reduced motor vehicle registration fees, this income dropped to \$9,859,702 in 1931, to \$8,918,993 in 1932, and to \$6,337,057 in 1933. This latter sum was approximately \$1,000,000 below the minimum fixed requirements at that time for highway bond debt service, maintenance, administration, and emergency or unavoidable reconstruction. A portion of the necessary reconstruction fund was provided in that year by the federal government. The remainder of the deficit, however, had to be funded through a sale of five-year bonds in the amount of \$1,500,000.

Since 1933 the state highway income has increased steadily. In 1936 it reached a total of \$10,243,742; in 1937, a total of \$10,921,069. The exact figures for the calendar year 1938 are not yet available. It is estimated that the total net income from road-user imposts will amount to \$10,670,000 in that year, which is a slight decrease from the preceding year. The detail figures for the calendar years 1937 and 1938 are as follows:

TABLE I

State Road-User Income for Calendar Year 1937

	<i>Gross Amount Paid by Motor Vehicle Owners</i>	<i>Collection Expense</i>	<i>Net Amount for State Highways, State Police and Counties</i>
Motor vehicle license fees and drivers' license fees	\$ 3,365,449	\$ 460,547	\$ 2,904,902
Gasoline tax (\$11,141,514 less \$1,323,692 refunds)	9,817,822	36,837	9,780,985
Motor transportation fees	838,339	233,538	*604,801
Fines and interest	32,446	.....	32,446
Totals	\$14,054,056	\$ 730,922	\$13,323,134
Less \$2,000,000 contribution to counties, \$326,741 to state police department and \$75,324 to the State General Fund			2,402,065
Net revenue for state highway purposes			\$10,921,069

* Does not include the transfer of \$219,582 on January 1, 1938, representing the net collections of the Public Utilities Commissioner during the last quarter of 1937.

TABLE II

Estimated State Road-User Income for Calendar Year 1938

	<i>Gross Amount Paid by Motor Vehicle Owners</i>	<i>Collection Expense</i>	<i>Net Amount for State Highways, State Police and Counties</i>
Motor vehicle license fees and drivers' license fees	\$ 2,780,000	\$ 280,000	\$ 2,500,000
Gasoline tax (\$11,240,000 less \$1,400,000 refunds)	9,840,000	40,000	9,800,000
Motor transportation fees	1,067,000	240,000	827,000
Fines	25,000	.....	25,000
Totals	\$13,712,000	\$ 560,000	\$13,152,000
Less \$2,126,000 contribution to counties, and \$348,000 to state police department			2,474,000
Net revenue for state highway purposes			\$10,678,000

During the depression years of 1932, 1933, and 1934, the State Highway Department was able normally to function only by reason of the receipt of certain extraordinary governmental aid in the form of various work relief appropriations, and by reason of the further fact that certain federal moneys were for the first time made available without the necessity for financial cooperation or matching hitherto required on the part of the state. During 1936 the federal government resumed, in part, the policy of requiring match moneys from the state, and during the current biennial period (1937-1938) the greater portion of federal funds for highway construction was required to be matched with state moneys.

In addition to *state* moneys expendable for highway purposes, as described hereinabove, highway revenues during the current biennial period have been augmented to a considerable extent through the receipt of federal aid. Funds received from this source fall into two general classifications: (1) periodic federal aid for highways, which consists of funds definitely appropriated for this purpose by Congress; and (2) extraordinary federal appropriations whose purpose is principally emergency unemployment relief. Falling in the first category are the regular federal aid funds, federal aid for secondary highways, federal funds for grade crossing elimination work, and federal lands highway funds. These funds are expended pursuant to fixed appropriations, and the amount which the State of Oregon will receive in each fiscal period is definitely determinate, contingent only upon the ability of the state to match the funds where matching is required. Falling in the second category are those cooperative funds received from the Public Works Administration and from the Works Progress Administration. No definite appropriations to any state are made from these sources, the extent to which the state may avail itself of such cooperation being limited by its ability to submit acceptable projects and to contribute its share from state funds. The allotments of periodic federal aid which have been made to the State of Oregon since the year 1934, exclusive of the special loan and grant for the five bridge structures on the Oregon Coast Highway, have amounted to approximately \$20,858,808, as indicated in Table III.

TABLE III
Federal Aid Allocations, 1934 to 1938

<i>Date of Act Authorizing Allotment</i>	<i>Fund Designation</i>	<i>Amount Allotted to Oregon</i>
June 18, 1934	1936 Federal lands highway funds	\$ 174,331
June 18, 1934	1936 Regular federal aid	2,044,633
June 18, 1934	1937 Regular federal aid	2,045,078
April 8, 1935	1936 Works program highway funds	3,038,642
April 8, 1935	1936 Works program grade separation funds	2,334,204
June 16, 1936	1938 Regular federal aid	2,092,368
June 16, 1936	1938 Grade separation funds	588,377
June 16, 1936	1938 Secondary highway funds	418,474
June 16, 1936	1938 Federal lands highway funds	168,367
June 16, 1936	1939 Regular federal aid	2,048,413
June 16, 1936	1939 Grade separation funds	565,844
June 16, 1936	1939 Secondary highway funds	409,683
June 16, 1936	1939 Federal lands highway funds	167,394
June 8, 1938	1940 Regular federal aid (estimated)	1,631,000
June 8, 1938	1940 Grade separation funds (estimated)	226,000
June 8, 1938	1940 Secondary highway funds (estimated)	245,000
June 8, 1938	1940 Federal lands highway funds (estimated)	67,000
June 8, 1938	1941 Regular federal aid (estimated)	1,876,000
June 8, 1938	1941 Grade separation funds (estimated)	340,000
June 8, 1938	1941 Secondary highway funds (estimated)	245,000
June 8, 1938	1941 Federal lands highway funds (estimated)	134,000
Total		\$20,859,808

Federal funds collected by the State Highway Commission during the calendar years 1937 and 1938, and estimates of the amounts expected to be collected during the calendar years 1939 and 1940 are as follows:

1937 (exclusive of coast bridge funds)	\$4,322,149.46
1938 (approximate)	2,540,000.00
1939 (estimated)	3,544,000.00
1940 (estimated)	2,400,000.00

Attention is called to the fact that the amounts above stated are the amounts of federal funds collected during the respective calendar years to reimburse the State for expenditures made on cooperative projects, including expenditures made during the previous year as well as expenditures made during the current year. The amounts should not be confused with the amounts of federal aid expended during those years or with

the amounts of federal aid funds apportioned to the State for those years, which amounts may differ very greatly from the amounts collected. For instance, while the amount of federal aid expected to be collected in 1939 is \$3,544,000, the amount of federal aid funds apportioned to the State for the fiscal year 1939 is \$3,191,000, and the amount of federal aid funds to be utilized in work performed during 1939 is approximately \$2,800,000. Due to the State's inability to more promptly match the federal funds available only \$1,300,000 of the \$3,191,000 apportioned for the fiscal year 1939 can be collected during 1939.

Federal funds received by the State Highway Commission which fall in the first category above described can be used only for improvements of a permanent nature, and usually they can be used only on highways included in the federal aid highway system of the State. They are not available to meet maintenance expense, operating costs, interest or principal on bond indebtedness, the expense of making surveys, or securing rights of way. With certain exceptions, they are not available for work on county roads or secondary highways. Federal aid is also contingent upon certain cooperative expenditures by the state in a considerable amount. The percentages of co-operation (state funds) required for the various types of regular governmental aid are as follows:

	Stipulated Minimum	Actual Average
Regular federal aid	39 per cent	43 per cent
Federal aid for secondary highways	39 per cent	43 per cent
Federal aid for grade separation projects	0 per cent	14 per cent
Federal aid for federal lands highway projects	0 per cent	30 per cent

In addition to providing cooperative funds in the percentages here indicated, the State is required to provide all rights of way and to bear all preliminary engineering expense.

Amounts Received and Disbursed, 1937-1938

The amounts received into the State Highway Fund from all sources and the amounts disbursed therefrom during the calendar years 1937 and 1938, were as shown in Table IV.

TABLE IV
Receipts and Disbursements, 1937 and 1938

	1937 (Actual)	1938 (Estimated)
<i>Receipts:</i>		
Road-user income	\$13,323,134.05	\$13,152,000.00
Federal funds collected	4,589,894.89	2,570,000.00
County cooperation	80,174.48	183,000.00
Miscellaneous cooperation	62,146.90	25,000.00
Bond sales (6-month bonds)	1,000,000.00	750,000.00
Gross receipts	\$19,055,350.32	\$16,680,000.00
Deduct for contributions to Counties, State Police Dept., and State's General Fund	2,402,064.98	2,474,000.00
Net income for state highway purposes	\$16,653,285.34	\$14,206,000.00
Balance on hand, beginning of year	*1,049,560.19	*375,501.84
Total amount available for disbursements	\$17,702,845.53	\$14,581,501.84
<i>Disbursements:</i>		
Bond interest and principal	\$ 3,784,228.06	\$ 3,978,000.00
Maintenance of highways	3,630,935.11	3,550,000.00
Construction of highways	7,904,574.01	5,060,000.00
Rights of way, parks, surveys, administration, tourist promotion and other purposes	2,007,606.51	1,640,000.00
Total amount disbursed	\$17,327,343.69	\$14,228,000.00
Balance on hand, end of year	\$ * 375,501.84	\$ * 353,501.84

* Includes \$75,000 in pay roll revolving fund.

Discontinuance of the federal work relief programs and other emergency programs has resulted in a very considerable falling off in the annual disbursement of the Department and particularly in the amounts disbursed for construction purposes. The extent of this falling off in construction expenditures, is shown by the following tabulation.

Year	Amount Expended for Construction Purposes
1934	\$ 7,210,839.24
1935	7,711,016.85
1936	11,225,422.39
1937	7,904,574.01
1938 (estimated)	5,060,000.00

The bond sales of \$1,000,000 in 1937, and of \$750,000 in 1938, which are listed in the foregoing statement of receipts and disbursements were sales of short-term bonds (none running for more than six months) made as temporary financing measures to enable the utilization of winter income in the performance of construction work during the preceding summer months. For example, the sale of \$750,000 of bonds in July,



SANDY BOULEVARD. COLUMBIA RIVER HIGHWAY IN PORTLAND. RESURFACED IN 1938

1938, enabled the State to match \$1,000,000 of federal aid and to contract for 1938 performance, construction work valued at \$1,750,000 which otherwise could not have been contracted until the late fall of 1938, and could not have been effectively performed until the summer of 1939.

The bonds sold to accomplish this advance of construction work will be retired on December 31, 1938, with income received in November and December after the construction season is over. The bond sales were in reality only short-term loans such as are regularly made in private business. The interest rates paid (0.45% in 1937 and 0.37% in 1938) were so low that the costs of the loans were negligible.

Detailed statements of the receipts and disbursements, for which briefly summarized statements are given above, will be found in the report of the State Highway Engineer (see tables XI and XII).

State Debt Structure for Highways

At the close of the biennial period ending June 30, 1938, the state highway bond debt amounted to \$19,841,750, there having been retired a total of \$4,575,000 during the two years. The principal payments on outstanding highway bonds will remain fairly uniform at approximately two million dollars annually for each of the six years from 1939 to 1944, inclusive. No appreciable relief from this major obligation can be realized until after the year 1944, but during the three years from 1945 to 1947 there will be a reduction in principal retirements of some \$400,000 yearly, leaving at the end of 1947 an outstanding indebtedness of but \$3,350,000.

Short-term bonds in the amount of \$1,000,000 were sold September 1, 1937, to enable the State to use part of its forthcoming winter income for carrying on its federal aid program during the 1937 summer construction season. One-half of this issue was retired on December 31, 1937, and one-half on January 31, 1938.

Another short-term bond sale was made as of July 1, 1938, for the same purpose as the 1937 issue. The amount of this sale was \$750,000 with the expectation that a part would be retired December 31, 1938, and the balance March 1, 1939.*

* The entire amount of this \$750,000 sale was actually retired on December 31, 1938, and the accompanying bond tables have been corrected accordingly.

TABLE V
State Highway Bonded Indebtedness Account

Calendar Year	Annual Principal	Annual Interest	Annual Total	Bonds Outstanding At End of Year
1917	\$	\$ 5,000.00	\$ 5,000.00	\$ 1,400,000.00
1918		72,900.00	72,900.00	2,840,000.00
1919		141,099.99	141,099.99	10,140,000.00
1920		503,725.00	503,725.00	19,140,000.00
1921		974,870.83	974,870.83	30,700,000.00
1922	125,000.00	1,521,266.67	1,646,266.67	36,075,000.00
1923	179,750.00	1,742,150.00	1,921,900.00	38,395,250.00
1924	334,500.00	1,824,240.00	2,158,740.00	38,060,750.00
1925	3,797,000.00	1,799,267.05	5,596,267.05	37,263,750.00
1926	1,197,000.00	1,722,761.65	2,919,761.65	36,066,750.00
1927	1,600,000.00	1,663,215.87	3,263,215.87	34,466,750.00
1928	1,750,000.00	1,586,060.99	3,336,060.99	32,716,750.00
1929	1,825,000.00	1,503,578.47	3,328,578.47	30,891,750.00
1930	1,925,000.00	1,418,314.70	3,343,314.70	30,466,750.00
1931	1,975,000.00	1,386,522.18	3,361,522.18	29,491,750.00
1932	2,975,000.00	1,369,435.06	4,344,435.06	27,516,750.00
1933	1,975,000.00	1,290,992.54	3,265,992.54	27,041,750.00
1934 ①	2,175,000.00	1,250,010.02	3,425,010.02	25,866,750.00
1935 ①	5,675,000.00	1,225,541.73②	6,900,541.73	25,691,750.00
1936 ①	2,950,000.00	1,089,213.37	4,039,213.37	23,441,750.00
1937 ③	2,800,000.00	984,228.06	3,784,228.06	21,641,750.00
1938 ③	3,550,000.00	877,764.27	4,427,764.27	18,841,750.00
1939 ③	2,000,000.00	776,394.23	2,776,394.23	16,841,750.00
1940	2,075,000.00	683,724.19	2,758,724.19	14,766,750.00
1941	2,150,000.00	589,085.40	2,739,085.40	12,616,750.00
1942	2,125,000.00	493,790.36	2,618,790.36	10,491,750.00
1943	2,070,250.00	399,995.32	2,470,245.32	8,421,500.00
1944	1,915,500.00	308,610.28	2,224,110.28	6,506,000.00
1945	1,453,000.00	227,913.99	1,680,913.99	5,053,000.00
1946	1,053,000.00	166,998.95	1,219,998.95	4,000,000.00
1947	650,000.00	126,765.80	776,765.80	3,350,000.00
1948	500,000.00	104,109.53	604,109.53	2,850,000.00
1949	425,000.00	86,797.01	511,797.01	2,425,000.00
1950	325,000.00	72,171.99	397,171.99	2,100,000.00
1951	275,000.00	62,046.97	337,046.97	1,825,000.00
1952	275,000.00	52,984.45	327,984.45	1,550,000.00
1953	275,000.00	43,921.93	318,921.93	1,275,000.00
1954	275,000.00	34,859.41	309,859.41	1,000,000.00
1955	275,000.00	25,796.89	300,796.89	725,000.00
1956	200,000.00	17,531.25	217,531.25	525,000.00
1957	150,000.00	12,187.50	162,187.50	375,000.00
1958	150,000.00	8,437.50	158,437.50	225,000.00
1959	150,000.00	4,687.50	154,687.50	75,000.00
1960	75,000.00	937.50	75,937.50	.....
	\$55,650,000.00	\$30,251,906.40	\$85,901,906.40	
Less refunding and temporary financing bonds	11,450,000.00	.....	11,450,000.00	
Totals ①	\$44,200,000.00	\$30,251,906.40	\$74,451,906.40	

① Includes Coast Bridge short-term bonds.

② Includes \$4,866.50 refund to cover accrued interest paid in by Ladd & Bush, Bankers on Coast Bridge bonds.

③ Includes retirement of 1937 and 1938 short-term bonds.

TABLE VI
State Highway Bonds Issued, 1917 to 1938

Year	Par Value of Bonds Sold		Time for Retirement	Bonds Retired Same Year
	Long Term Construction Bonds	Short Term Bonds for Temporary Financing		
1917	\$ 400,000.00 ✓	\$	8 years	\$
	1,000,000.00	.....	25 years	.....
1918	1,440,000.00 ✓	.....	25 years	.....
1919	800,000.00 ✓	.....	14 years	.....
	6,500,000.00	.....	25 years	.....
1920	9,000,000.00	.....	25 years	.....
1921 .....	.....	3,000,000.00 ①	4 years	.....
	8,560,000.00 ✓	.....	25 years	.....
1922	5,500,000.00	.....	25 years	125,000.00
1923	2,500,000.00	.....	25 years	179,750.00
1924 .....	.....	.....	.....	334,500.00
1925	3,000,000.00	.....	25 years	3,797,000.00
1926 .....	.....	.....	.....	1,197,000.00
1927 .....	.....	.....	.....	1,600,000.00
1928 .....	.....	.....	.....	1,750,000.00
1929 .....	.....	.....	.....	1,825,000.00
1930	1,500,000.00 ②	.....	25 years	1,925,000.00
1931	1,000,000.00 ③	.....	25 years	1,975,000.00
1932 .....	.....	1,000,000.00 ④	6 months	2,975,000.00
1933 .....	.....	1,500,000.00 ⑤	5 years	1,975,000.00
1934 .....	.....	1,000,000.00 ⑥	1 year	2,175,000.00
1935	3,000,000.00 ⑦	.....	25 years	3,175,000.00
	.....	1,000,000.00 ⑧	6 months	1,000,000.00
	.....	1,500,000.00 ⑨	10 days	1,500,000.00
1936 .....	.....	700,000.00 ⑩	10 days	2,950,000.00
1937 .....	.....	1,000,000.00 ⑪	6 months	2,800,000.00 ⑫
1938 .....	.....	750,000.00 ⑬	8 months	3,550,000.00 ⑭
Totals	\$44,200,000.00	\$11,450,000.00		\$36,808,250.00
Bonds retired	25,358,250.00	11,000,000.00		
Bonds outstanding end of 1938	\$18,841,750.00	\$ 450,000.00		

① Account of unfavorable bond market, \$3,000,000 of 4-year bonds were sold with intention to refund in 1925 with long-term bonds at lower interest rate.

② This bond sale made to enable State to match available federal aid.

③ This bond sale made to finance state relief labor program.

④ This sale of 6-months bonds was made to overcome deficit caused by change in date of licensing cars from January 1st to July 1st.

⑤ This sale of 5-year bonds was made to finance state relief program.

⑥ These sales of short-term bonds made to finance the construction of the five Oregon Coast Bridges.

⑦ This sale was made to refund a like amount of Oregon Coast Bridge bonds, resulting in a saving of interest.

⑧ These sales of short-term bonds were made to enable the State to utilize its winter income in carrying on its federal aid program during the preceding summer construction season.

⑨ Includes \$500,000 of 1937 short-term bonds retired December 31, 1937.

⑩ Includes \$500,000 of 1937 short-term bonds retired January 31, 1938, and \$750,000 of 1938 short-term bonds to be retired December 31, 1938.



WHITESON BRIDGE OVER SOUTH YAMHILL RIVER IN YAMHILL COUNTY

Comparison of State Highway Income with State Highway Requirements

Due to the fact that the complete financial statements which appear elsewhere in this report necessarily are affected by carry-over items, lags in federal aid collections, balances on hand and other like items, such statements do not afford an easily understood basis for determining whether the present state revenues are or are not sufficient to meet state highway requirements, including the matching of federal aid. Therefore, there has been shown in Table VII a statement of income and requirements from which all confusing items are eliminated and in which direct comparison is made of the net income of a single year and the net requirements of a single year. The year taken for this comparison is an average of the two years 1939 and 1940, and the income and requirements compared are strictly state fund income and state fund requirements.

If Table VII is a correct showing of the present annual state fund revenues and requirements, and the Highway Commission believes that it is, the present state revenues are not sufficient to meet the fixed or mandatory requirements of the state highways and to also match the State's share of federal aid funds. The table shows the revenues to be insufficient in the amount of \$450,000 and this showing of the table is borne out by the fact that the State is falling farther and farther behind in the taking up of the federal aid funds. Three years are allowed for the taking up of any given federal allocation and with adequate state funds, most, if not all of the allotment could be taken up during the first of the three years. Oregon's present rate of taking up its allotment is about as follows: first year, 16 per cent; second year, 50 per cent; third year, 34 per cent. Unless a decided up-turn in economic conditions takes place very soon, Oregon will be unable to take up its federal aid until the third and last year and may, by 1943 or 1944, be suffering an actual loss of a part of its federal aid.

As long as the State is able to meet its federal aid, it can carry on a construction and reconstruction program of from \$5,000,000 to \$6,000,000, which, when it is considered that the modernization of the present highway system will cost between \$125,000,000 and \$150,000,000, is a very modest program.

TABLE VII

Annual Revenues and Annual Requirements State Funds for
State Highway Purposes Years 1939-1940

I. ANNUAL REVENUES:

a. *Gross Amounts:*

1. Motor vehicle and drivers' license fees	* \$ 3,100,000
2. Gasoline tax (after payment of refunds)	9,890,000
3. Motor transportation fees	1,100,000
4. Fines for traffic law violations	30,000

Total Gross Revenue	\$14,120,000
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b. *Deductions and Transfers:*

1. Administrative expense, Motor Vehicle Dept.	\$ 400,000
2. Administrative expense, Gasoline Tax Collection Dept.	40,000
3. Administrative expense, Motor Transportation Dept.	250,000
4. Contributions to State Police Department	350,000
5. Contributions to counties	2,110,000

Total Deductions and Transfers	* \$ 3,150,000
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Net Annual Revenue for State Highways	* \$10,970,000
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II. ANNUAL REQUIREMENTS:

a. *Fixed Requirements:*

1. Bond Interest and Principal	\$ 2,770,000
2. Maintenance of Primary Highways	3,000,000
3. Maintenance of Secondary Highways	745,000
4. Operations of Ferries and Drawbridges	50,000
5. Maintenance of State Parks	100,000
6. Construction expenditures on Secondary Highways necessary to comply with law	100,000
7. Minor Betterment Work	325,000
8. Required construction work ineligible for federal aid	400,000
9. Administration and supervision	400,000
10. Legislative authorization and miscellaneous	75,000
11. Tourist promotion expense	110,000
12. Contingencies (Maintenance)	150,000

Total of Fixed Requirements	\$ 8,225,000
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b. *Required to Take Up Federal Aid:*

1. To take up Regular Federal Aid Funds	\$ 1,425,000
2. To take up Secondary Highway Funds	185,000
3. To take up Grade Separation Funds	60,000
4. To take up Federal Lands Highway Funds	65,000
5. To cooperate in WPA Program	350,000
6. To provide right of way	600,000
7. Buildings for maintenance quarters	50,000
8. To make surveys and plans	210,000
9. Contingencies (Construction)	250,000

Total to Take Up Federal Aid	\$ 3,195,000
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Net Annual Requirement	\$11,420,000
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Amount by which net annual revenue is insufficient to meet net annual requirements, including federal aid requirements	\$ 450,000
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* There is a yearly variation of approximately \$400,000 net, in the receipts of motor vehicle and drivers' license fees due to the biennial renewal of operators' licenses. The above receipts represent an average of the two years.

State funds for maintenance buildings, for special maintenance and for construction work ineligible for federal aid have been used to set up a PWA program

Legislative Recommendations

The attention of the members of the Fortieth Legislative Assembly is respectfully called to the precarious state of highway finances at this time. A review of Table VII, which indicates the relationship between estimated income of state funds and the estimated disbursements of state funds for the ensuing two years, discloses the fact that the estimated income is short by approximately \$450,000 per year of the amount necessary to provide sufficient funds to discharge debt, maintain roads, administer the Highway Department, carry on the pressing needs of building and of reconstructing worn-out road surfaces and old bridges on sections of highways not eligible for federal aid, and to match the federal funds made available each year for the building and reconstructing of the federal aid highway system.

The federal aid highway system comprises the main arterial highways of Oregon, which carry the lifeblood of the State's commerce. The secondary or feeder roads carry the products of the farm and the forest to the arterial system and thence over that system to the city markets.

The use of PWA grant funds to augment the state funds on maintenance expense and on the cost of mandatory non-federal aid construction has temporarily alleviated the shortage of state funds referred to in the first paragraph, but there is no assurance of the continued availability of PWA funds. Any decrease of state highway funds, whether by reduction of motor transport fees and taxes made by this legislature, adverse economic conditions, or by the allocation of more road-user funds either to the counties or to the cities, will prevent the

to carry on these three classes of work. By adopting this procedure, a grant of approximately \$500,000 of PWA funds will be returned to the State during 1939. This, together with receipts of back federal aid and PWA cooperation will nearly wipe out the deficits which would otherwise be encountered in the years 1939 and 1940. The relationship between income and disbursements clearly indicates, however, that on the basis of present estimates the Department's annual income is about \$450,000 short of being sufficient to meet the requirements of debt service, maintenance cost, administrative cost, et cetera, and to match the annual allotments of federal aid now available.

Present federal allotments are below the amounts allotted in earlier years. Should the Congress restore the allotments to their former amounts, the deficit will be increased to approximately \$750,000 annually.

matching of an equivalent amount of federal aid funds, which funds will be lost to the State and be reallocated among the other states of the Union.

Federal aid funds are, in the main, derived from federal taxes levied upon the road-users of the state, and it would be extremely unfortunate if the motorists of Oregon were deprived of the benefits accruing through the expenditure of their own funds for the improvement of road facilities so sorely needed by them at this time.

The attention of the legislature is directed to Technical Bulletin No. 10, entitled "An Analysis of the Highway Tax Structure in Oregon," and to the appendix to that bulletin which illustrates the relationship between what is considered a fair and just taxation of the highway beneficiaries and a fair and just allocation of tax funds to the various street and road systems in comparison to present system obligations, present taxation, and present allocation of funds. The Highway Commission believes that the state highway fund should receive more rather than less of the road-user funds now collected, and that the counties are now receiving more of such funds than they are justly entitled to receive.

Attention is further directed to a letter addressed to the Interim Committee of the Legislature Studying Road Taxation, under date of November 4 and signed by the State Highway Engineer, which letter summarizes the results of the investigation of the present road tax structure covered by Technical Bulletin No. 10. While it is evident that the cities should receive a portion of road-user funds for the building and maintenance of city streets, it is felt that by far the greater portion of such funds eligible for city use should be employed on the arterial streets. In the main, the arterial streets are the routes of the state highways into and through the cities, which streets are maintained and reconstructed with state road-user funds augmented through the matching of federal aid.

The direct allocation of more road-user funds to the cities will prevent the matching of federal aid in direct proportion to the moneys subtracted from the state highway fund. The most pressing problem in the cities of Oregon, at the present

time, is the relief of congestion along the routes of the state highways into and through cities. The only way in which it appears possible to accomplish this meritorious objective is by leaving the funds with the State Highway Department in order that these funds may be used for the matching of federal funds. Present federal statutes do not permit the city authorities to cooperate with the Federal Government in this manner.

As evidence of the good faith of the Highway Commission with respect to the obligation imposed by the legislature for the building and maintaining of the arterial routes through the various cities, the record shows that, during the past four years, the State Highway Commission has expended in building and maintaining the arterial routes of the state highways through the cities of Oregon the sum of \$7,758,900. The proportion of road-user revenues that should have been expended upon the arterial streets along these routes during this same period of time, based on the theory of benefits, amounts to the sum of \$5,640,000. In other words, there has been expended annually during the past four years on main city streets, by the State Highway Commission, approximately \$530,000 more than the corresponding equitable obligation. In the main, these were construction funds and the expenditures were made possible by the matching of federal aid.

It is apparent, therefore, that while the cities have not received any road-user moneys for their secondary and tertiary systems, they have been relieved of certain pressing needs on the urban arterial highways and have received more funds in total than the theory of benefits propounded in Technical Bulletin No. 10 indicates to be equitable and fair.

It is believed by the members of the State Highway Commission that the highway system of Oregon, including its extensions through the cities, which extensions are reconstructed and maintained with state highway funds, is the most important single factor in the economic well-being of the state.



SANTIAM HIGHWAY WEST OF SISTERS, DESCHUTES COUNTY

Section Two

REPORT

OF THE

State Highway Engineer

TO THE

State Highway Commission

OF THE

STATE OF OREGON

1937-1938

R. H. BALDOCK, State Highway Engineer

LETTER OF TRANSMITTAL

Salem, Oregon.
January 1, 1939.

To the Honorable State Highway Commission:

Henry F. Cabell, Chairman
E. B. Aldrich, Commissioner
F. L. Tou Velle, Commissioner

Gentlemen:

I have the honor to submit to you herewith the report of the State Highway Engineer for the period July 1, 1936, to June 30, 1938.

Respectfully yours,

R. H. BALDOCK
State Highway Engineer

Section Two

REPORT OF THE

STATE HIGHWAY ENGINEER

TO THE

STATE HIGHWAY COMMISSION

1937-1938

INTRODUCTION

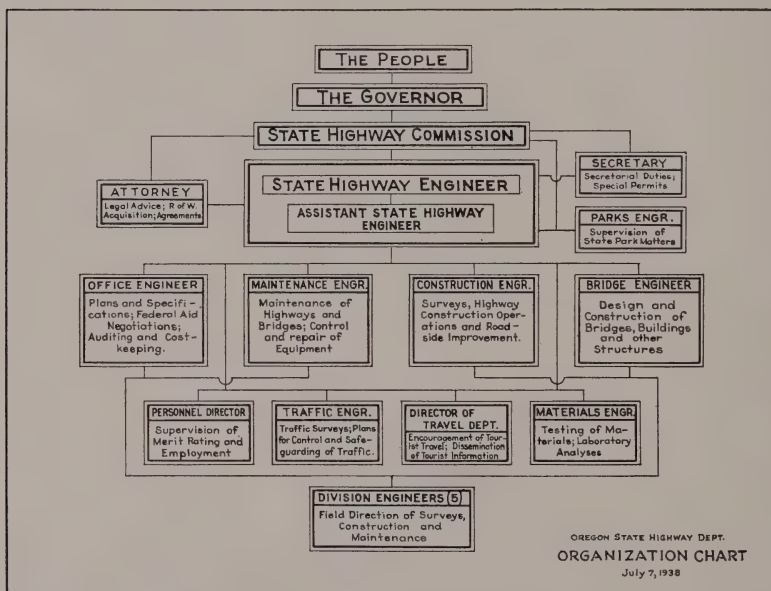
This portion of the biennial report has for its purpose the presentation of a brief outline of the various findings and activities of the Highway Department during the current biennium, together with such statistical information as is necessary for a proper understanding of the problems and activities of the Department. The section which immediately follows comprehends a presentation of the organization of the Highway Department, and a brief description of the duties of the various administrative and executive heads. Following this is a report on the progress made during the biennium in the improvement of state highways, which portion, in turn, is followed by a report of the individual department heads, as follows:

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HIGHWAY DEPARTMENT ORGANIZATION

The administrative organization of the Highway Department consists of the State Highway Engineer, the Assistant State Highway Engineer, the Attorney, and the Secretary. The executive staff consists of the Office Engineer, the Maintenance Engineer, the Construction Engineer, the Bridge Engineer, the Parks Engineer, the Traffic Engineer, the Materials Engineer and the Travel and Information Department. The line or field organization consists of five Division Engineers with headquarters at Portland, Salem, Roseburg, Bend and La Grande.

The integration of the organization is indicated by the chart given hereinbelow, and the paragraphs descriptive of the departments of the various administrative and executive officers which follows:



Assistant State Highway Engineer: The Assistant State Highway Engineer is the acting head of the Department in the absence of the State Highway Engineer, and, in addition, carries at all times a certain delegated portion of the admin-

istrative load. The four Staff Officers report to the Assistant State Highway Engineer in connection with certain definite activities. In general, these comprehend those functions of the Office Engineer involving matters of highway accounting; those functions of the Maintenance Engineer involving the annual budgets for bridges and buildings; those functions of the Construction Engineer involving economics, project analyses and landscaping; and those functions of the Bridge Engineer involving design and technical detail. The Assistant State Highway Engineer handles all Testing Laboratory, Travel Department and all Personnel matters. C. B. McCullough is the Assistant State Highway Engineer.

Attorney: The Attorney acts as general counsel for the Highway Commission, has charge of all matters of a legal nature, and superintends the acquisition of all property for rights of way, quarries, and other purposes. J. M. Devers is Attorney, and J. W. DeSouza is Assistant Attorney for the Commission.

Secretary: The Secretary has charge of all details of a secretarial nature, including the preparation and compilation of the minutes of all Commission meetings, the issuance of highway use permits, and Commission correspondence. H. B. Glaisyer is Secretary for the Highway Commission.

Office Engineer: The Office Engineer has charge of the preparation of highway plans and specification, and of all auditing, cost keeping and federal aid negotiations. S. H. Probert is Office Engineer.

Construction Engineer: The Construction Engineer supervises all field engineering work involved in the locating, planning and constructing of highways, including economic surveys, project analyses and roadside beautification. All contract work other than bridge and building work is under his direction. H. G. Smith is Construction Engineer.

Maintenance Engineer: The Maintenance Engineer superintends the work of maintaining all highways and bridges, and supervises the upkeep and operation of all equipment owned by the Department. J. N. Bishop is Maintenance Engineer.

Bridge Engineer: The Bridge Engineer supervises the design and construction of all bridges, grade separations, buildings, and other major structures. G. S. Paxson is Bridge Engineer.

Parks Engineer: The State Parks Engineer superintends the operation, maintenance and improvement of all state parks. S. H. Boardman is the State Parks Engineer.

Traffic Engineer: The Traffic Engineer has charge of the problems involved in the direction and control of highway traffic. He is also State Manager in charge of the State-wide Highway Planning Survey. John Beakey is Traffic Engineer.

Materials Engineer: The Materials Engineer has charge of the departmental testing laboratories and of the inspection of all materials in the field. N. M. Finkbiner is Materials Engineer.

Director of Travel and Information: The Director of the Travel and Information Division has charge of the Department's travel promotion campaign and the Division of Tourist Travel Information. H. B. Say is Director of this department.

Field Work

In the performance of the field duties incidental to the supervision and direction of the construction, maintenance and operation of state highways, there are five Division Engineers reporting to the four executive Staff Officers above named (Office Engineer, Maintenance Engineer, Construction Engineer, and Bridge Engineer).

Each division engineer supervises and directs all surveys, construction work and maintenance work on the state highways within his division. He acts as the local representative of the State Highway Department in dealing with county officers, contractors, and the public in general. In other words, the division engineers are line officers having direct charge of the work, and the work is coordinated so as to bring about a uniformity in surveys, construction and maintenance by the four staff officers, each of whom acts as the personal representative of the state highway engineer in his negotiations with the division engineers.

The maintenance is directed locally by 15 resident maintenance engineers, acting as maintenance superintendents, located within the five divisions, who have direct supervision of 116 section crews, each working under the direction of a section foreman. The maintenance superintendents also supervise the work of the extra gang crews in removing snow, removing slides, re-oiling surfacings, patching pavements, repairing bridges, etc., which work is generally seasonal in character. Their duties are, in general, to see that the proper materials and equipment are supplied, to supervise the work of the section crews and extra gangs, to keep an accurate account of the expense incurred, and in all respects to look after the upkeep of the highways within their respective territories.

When highway location surveys are to be made in a division, a locating engineer is assigned by the construction engineer to perform the work under the supervision of the division engineer. The construction projects are handled by resident construction engineers who are moved from one division to another as the distribution of the work may require. Each resident construction engineer is in charge of one or more contract jobs and his duties are to measure the quantities of work for which the contractor is entitled to payment, to inspect the workmanship and materials, and to insure compliance with the specifications, and to otherwise look after the interests of the State in connection with all matters concerned.

Division No. 1 is in charge of E. A. Collier, with headquarters in Portland. It comprises the counties of Multnomah, Clackamas and Washington, and parts of Yamhill, Columbia and Hood River.

Division No. 2 is in charge of F. D. Eason, with headquarters in Salem. It comprises the counties of Marion, Linn, Benton, Polk, Lincoln, Tillamook and Clatsop, and parts of Columbia and Yamhill.

Division No. 3 is in charge of K. D. Lytle, with headquarters in Roseburg. It comprises the counties of Lane, Douglas, Coos, Curry, Josephine and Jackson.

Division No. 4 is in charge of W. E. Chandler, with headquarters in Bend. It comprises the counties of Wasco, Sherman, Jefferson, Crook, Deschutes, Klamath and Lake, and parts of Hood River, Gilliam, Wheeler and Harney.

Division No. 5 is in charge of W. C. Williams, with headquarters in La Grande. It comprises the counties of Morrow, Umatilla, Union, Wallowa, Baker, Malheur and Grant, and parts of Gilliam, Wheeler and Harney.

Equipment Department

The Equipment Department is directly under the supervision of the Maintenance Engineer. In view of the fact that practically all of the equipment is used in maintenance operations, the central control of both features, which was placed in effect in 1932, has proven very satisfactory. The Equipment Department repairs and maintains the equipment for which a rental charge is made which includes a depreciation charge which is decreased each year of the life of the equipment until the first cost is amortized. A perpetual inventory is kept of all state property, and each employe is held responsible for all equipment placed in his charge until relieved of that responsibility by proper authority. Worn out and obsolete equipment and materials, scrap metal, etc., are disposed of by a survey board consisting of one of the State Highway Commissioners, the State Highway Engineer and one of the staff officers who appraise the value and dispose of the material on the basis of competitive bids.

Equipment repair shops are located at Salem, La Grande, Klamath Falls and Coquille.

PROGRESS IN HIGHWAY IMPROVEMENT

General Summary

Expressed in mileages of different classes of work performed, under the supervision of the State Highway Commission, the progress made during 1937 and 1938 in the improvement of highways is as follows:

TABLE VIII

Classification of Work	Primary (Miles)	Secondary (Miles)	County (Miles)
a. New Construction Work:			
Concrete paving	15	.....	.....
Bituminous paving	1	.....	.....
Bituminous macadam wearing surface	111	.....	2
Oil treatment	278	144	47
Crushed rock surfacing	116	3	28
Grading	65	27	.....
b. Resurfacing, Widening, Etc.:			
Pavement widening and resurfacing	70	.....	.....
Oil treatment	114	3	.....
Crushed rock resurfacing	197	55	10
Regrading and widening	169	10	11

When the miles of improvement made during the biennium are combined with the mileages improved during earlier years, the mileages of improvement made since the beginning of state highway construction in 1913 are found to be as follows:

TABLE IX

Kind of Work	Constructed by Highway Commission (Miles)	Constructed by Bureau of Public Roads (Miles)	Total (Miles)
New Construction Work:			
Paving	807	.....	807
Bituminous macadam	914	87	1,001
Rock and gravel surfacing	2,862	672	3,534
Grading	3,228	659	3,887
Betterment Work:			
Pavement resurfacing and widening	298	.....	298
Non-skid treatment	412	.....	412
Oiling	2,626	107	2,733
Resurfacing	1,309	30	1,339
Regrading	1,113	79	1,192

Of the 4,744 miles in the primary system of state highways at the close of 1938, 870 miles are paved, 1,039 miles are surfaced with bituminous macadam, 1,903 miles are surfaced with oiled macadam, 561 miles are surfaced with rock or gravel



PACIFIC HIGHWAY EAST. RELOCATION SOUTH OF SALEM



PACIFIC HIGHWAY WEST. RECONSTRUCTION ON REX HILL
NORTH OF NEWBERG

surfacing and 254 miles are graded ready for surfacing. Only 117 miles may be classed as unimproved.

The improvement status of each of the 154 state highways is shown in the mileage tabulations given in Part Three of this report.

Owing to the discontinuance of the National Recovery Programs under which very considerable sums of federal money were available to the State during the years 1934, 1935 and 1936 for highway improvement work on a 100 per cent grant basis, the rate at which highway improvement work has progressed during 1937, and more particularly during 1938, is much lower than during the peak year of 1936. The ratios of progress are indicated by the amounts expended for construction during the years involved, which amounts, in round figures, are as follows: 1936—\$11,440,000; 1937—\$8,180,000 and 1938—\$5,290,000.

Primary State Highways

In the paragraphs which follow, consideration is given to the progress made on each of the primary state highways on which improvements were made during the biennium, individual mention being made of the major projects.

Pacific Highway, U. S. No. 99, 99E and 99W: The work of reconstructing the Pacific Highway to standards commensurate with the very heavy traffic which that highway carries proceeded steadily during the biennium and was in progress at many places. Bituminous macadam surfacing was constructed on the previously graded unit, 7.9 miles in length, between Ashland and Siskiyou Station, making available for traffic the first unit of the completely new location between Ashland and the Oregon-California State Line. On the remaining unit of this major relocation project, a section 0.73 mile in length was graded at a cost of \$114,000 and contracts were let for the grading of an additional 3.2 miles. On the Medford-Ashland Section, a unit 3.4 miles in length, extending from Phoenix to Bear Creek, was regraded and repaved completing the modernizing of that important and heavily travelled section. South of Roseburg, a section 2.3 miles in length, called the Shady Point-Kelley Corner Section, was graded and paved, making available

for use the previously constructed overcrossing structure at Kelley Corner, and thus eliminating the dangerous grade crossing at Shady Point. In the City of Roseburg, a section, 0.91 mile in length, was graded and paved on new alignment, very greatly facilitating the movement of the highway traffic through the city. North of Oakland, the Turkey Hill-Chenoweth Park Section, 1.0 mile in length, was graded and paved, eliminating a very tortuous unit of the former highway. On the completely new location between Junction City and Eugene, 4.5 miles of grading and 5.9 miles of pavement construction was performed, opening to traffic the whole of the 13-mile section between those cities. On the Shedd-Halsey Section south of Albany, 7.1 miles were widened and repaved. On the Pringle Creek-Illahe Section south of Salem, a previously graded unit 5.5 miles in length was paved, enabling traffic to avoid an equal length of narrow, poorly aligned and otherwise difficult road on the former route. On the Pacific Highway, West (99W), a new bridge was constructed at the crossing of the Yamhill River near Whiteson. As a part of the same project the undercrossing structure at Whiteson was reconstructed and 0.8 mile of new roadbed graded and paved. At McMinnville, a section 2.0 miles in length was graded and paved on new alignment, shortening the distance considerably and eliminating two grade crossings. At Lafayette, a section 0.4 mile in length was repaved with greater width and better alignment. Between Newberg and Rex Hill, a section 1.5 miles in length was reconstructed and paved, eliminating several sharp curves. In Portland, the new four-lane super-highway extending from Union Avenue and Market Street to Seventeenth Avenue and Schiller Street, a project commenced in 1936, was brought to completion and opened to traffic, providing a very much needed high-speed entrance to the business district of the city as well as a direct and easily followed route for through traffic. Other work on the Pacific Highway Routes through Portland included the construction of 3.3 miles of four-lane pavement on Interstate Avenue and the widening of the Sullivan's Gulch bridge and overcrossing on Union Avenue. Contracts awarded during the fiscal period covered by this report for construction work on the Pacific Highway total \$2,500,000.

Old Oregon Trail and Columbia River Highway, U. S. No. 30: Beginning at the eastern end of Oregon's portion of the Old Oregon Trail, the first of the 1937-38 improvements encountered is the grade separation at Ontario. This improvement consists of an undercrossing structure through which the highway passes under the Union Pacific main line tracks, and of 0.4 mile of new concrete pavement. The next improvement encountered is at Pumping Plant Hill, about eight miles north of Ontario. Here a section 3.2 miles in length was widened, straightened and resurfaced. Further north, in the Burnt River Canyon, a section 1.16 miles in length, known as the Tunnel Section, was graded, and a section 9.08 miles in length, known as the Gales-Lime Section, was provided with a heavy bituminous macadam wearing surface. These two projects were the final links in the reconstruction of the Burnt River Canyon Section the first unit of which reconstruction was undertaken in 1932. In furtherance of the reconstruction of the La Grande-Baker Section, a section 5.69 miles in length, between North Powder and the crossing of Muddy Creek, was regraded and provided with bituminous macadam surfacing. On the Blue Mountain Section north of La Grande, 8.0 miles of bituminous macadam surfacing was constructed to complete the reconstruction work which had been in progress on that section for several seasons. At Pendleton, an overhead crossing was constructed to eliminate the hazard of the former grade crossing of the Union Pacific tracks, and, as a part of that project, 1.2 miles of new pavement was constructed. Connecting with this project on the east was the Pendleton-Mytinger Project involving 1.1 miles of regrading and bituminous macadam surfacing. West of Pendleton, 8.9 miles of grading was performed and 19.9 miles of bituminous macadam surfacing constructed to complete the Stanfield-Pendleton Cut-off, which cut-off has reduced the distance between Stanfield and Pendleton by 4.9 miles and in addition has enabled traffic to avoid the tortuous alignment of the old road along the Umatilla River. Between Bonneville and Cascade Locks, the U. S. Bureau of Public Roads has constructed the Tooth Rock Tunnel, 850 feet in length, and has under construction the Ruckel Slide Section, 1.25 miles in length, and the Ruckel Creek-Cascade Locks Section, 1.14



OLD OREGON TRAIL ON EMIGRANT HILL, UMATILLA COUNTY



OLD OREGON TRAIL WEST OF PENDLETON

miles in length. In the same vicinity, the State Highway Commission has graded and surfaced the Bonneville-Eagle Creek Section, 0.83 mile in length. All of this work has been very heavy and expensive. In the City of Portland, a portion of Sandy Boulevard, 1.8 miles in length, has been widened and provided with a four-lane pavement. West of Portland, the reconstruction of the Lower Columbia River Highway has been advanced by the regrading and paving of a section 1.05 miles in length at Rocky Point, near the Multnomah-Columbia County Line, and by the regrading and paving of a section 3.95 miles in length from St. Helens east to Warren. During the two-year period covered by this report, contracts involving an expenditure of \$1,450,000 have been awarded for work on the Old Oregon Trail and Columbia River Highways.

The Dalles-California Highway: The major projects in progress on The Dalles-California Highway during 1937 and 1938 were the Redmond-Bend Project in Deschutes County, the Criterion-Cow Canyon Project in Wasco County and the Klamath Agency-Modoc Point Project in Klamath County. The Redmond-Bend Project is 15.0 miles in length. The grading was performed in 1935 and 1936. The surfacing and the bituminous macadam wearing surface were constructed in 1937. The Criterion-Cow Canyon Project is 11.5 miles in length. The surfacing and oiling on that project was commenced in July, 1936, and was completed in July, 1937. The Klamath Agency-Modoc Point Project involves 13.7 miles of grading and the construction of a bridge over the Williamson River. The work is approximately fifty per cent complete at the end of 1938. Contracts awarded during the biennial period for work on The Dalles-California Highway aggregate \$330,000.

John Day Highway, U. S. No. 28 and Oregon No. 19: Probably the most noteworthy of the construction activities on the John Day Highway is the regrading project extending from the town of John Day east to the Oliver Ranch. This project, 4.43 miles in length, is the first unit in the reconstruction, on revised alignment, of the entire section between John Day and Prairie City. Other improvements made on the John Day Highway include 4.1 miles of grading, surfacing and oiling between Fossil and the junction with the road leading to

Kinzua; 2.75 miles of grading, surfacing and oiling on the Butte Creek Section; 27.8 miles of oiling on the Service Creek-Branson Creek Section; a new bridge over the North Fork of the John Day River at Kimberly; 3.29 miles of grading, surfacing and oiling between the Stewart Bridge, east of Dayville, and the Flat Creek road; and 23.8 miles of oiling between the Flat Creek road and the town of John Day. Contracts awarded during the biennium for work on the John Day Highway total \$400,000.

Central Oregon Highway, Oregon No. 54: The biennium has witnessed very material advancement in the status of improvement of this highway. Between Horse Ridge and Brothers, 16.1 miles have been regraded to provide additional width and 29.6 miles have been resurfaced and oiled. Between the Lake-Harney County Line and Gap Ranch, 2.1 miles have been regraded and 7.6 miles have been resurfaced and oiled. Between Gap Ranch and Silver Creek, 13.3 miles have been oiled. East of Burns, on the section from Burns to the Buchanan Ranch, the grading commenced in 1936 has been completed and 21.0 miles of oiled macadam surfacing has been constructed. East of Juntura, the Juntura-Harper Section, 34.5 miles in length, has been given a light oil treatment. Contracts let during the biennium amount to \$570,000.

Oregon Coast Highway, U. S. No. 101: Work on the Oregon Coast Highway during the biennium has been confined almost entirely to the new route between Seaside and Tillamook which is commonly referred to as the Cannon Beach Route. On that section, bridges have been constructed at Necarney Creek and Short Sand Beach Creek; a tunnel 1,100 feet in length has been constructed at Arch Cape; 1.24 miles of grading work has been completed on the Short Sand Beach Creek Section; and work is underway on a section 2.2 miles in length between Short Sand Beach and Arch Cape. When this last mentioned unit is completed, a travelable, although not completely surfaced, roadway will be available to traffic the entire length of the new route. On the present route between Seaside and Tillamook a new bridge has been constructed on improved alignment at the crossing of the North Fork of the Nehalem River. At Smith's Point in the City of Astoria, a section 0.77 mile in

length has been regraded and paved. Contracts awarded during the biennium for work on the Oregon Coast Highway total \$550,000.

Wallowa Lake Highway, Oregon No. 82: Work performed on the Wallowa Lake Highway consisted of the regrading, surfacing and oiling of a section 4.28 miles in length between Rock Creek and Wallowa. The cost of this project was \$65,000.

Enterprise-Lewiston Highway, Oregon No. 3: On the Enterprise-Lewiston Highway, there was undertaken the grading of the first unit of Oregon's portion of the connecting link between Flora in the State of Oregon, and Anatone in the State of Washington. This first unit is 6.14 miles in length and was graded at a cost of \$95,000.

Baker-Homestead Highway, Oregon No. 86: Improvements on the Baker-Homestead Highway consisted of the oiling of a section 5.68 miles in length between Baker and Flagstaff Hill and the surfacing and oiling of a section 18.15 miles in length between Middle Bridge (twenty miles east of Baker) and Black Bridge (seven miles west of Richland). These two projects cost \$69,000. A contract was let in the fall of 1938 for 18.03 miles of surfacing and oiling to be performed between Richland and Halfway in 1939.

Baker-Unity Highway, Oregon No. 7: Work performed on this highway during the biennium consisted of the construction of rock surfacing on a section 4.13 miles in length between Baker and the Gibbs Ranch. The cost of this project was \$6,500.

McKenzie Highway, U. S. No. 28: A section 20.67 miles in length, beginning at Blue River and ending at the county line between Lane and Deschutes counties was given a light oil treatment by state forces. A section 8.26 miles in length extending from the Summit in McKenzie Pass, east to Little Butte, was resurfaced and oiled. The cost of these projects totaled \$76,000.

Santiam Highway, Oregon No. 54: During 1937 and 1938, both the State and the Federal Government have bent all efforts to completing the grading of the last remaining link in this highway. The State, working from the west side, has completed 2.47 miles between Storm Creek and Sheep Ridge

and has made a good start on the section 1.53 miles in length between Sheep Ridge and Toll Creek. The U. S. Bureau of Public Roads, using federal forest highway money, has completed the Lower Tombstone Section, 0.98 mile in length, and has made considerable headway on the section 2.44 miles in length, between Toll Creek and Snow Creek. The projects mentioned cover the whole of the ungraded portion of the highway. Their completion in the fall of 1939 will leave the Santiam Highway complete except for the construction of approximately 35 miles of surfacing. The cost of the work above mentioned as being underway or completed during the biennium will total approximately \$660,000.

Willamette Highway, Oregon No. 58: Work on the Willamette Highway has been confined to the uncompleted section between mile point 55 and mile point 61.5. On this section, the U. S. Bureau of Public Roads, using federal forest highway funds, has constructed 1.87 miles of roadbed, including a tunnel 850 feet in length, and has constructed 2.27 miles of rock surfacing. On the eastern portion of the same section, the State has constructed 0.80 mile of roadbed and has cleared a section 3.16 miles in length. About 3.5 miles of grading remains to bring the grading of the highway to completion, and it is planned to place that work under contract early in 1939. The surfacing of the highway will also be gotten underway in 1939, a contract having been awarded late in 1938 for 23.0 miles of surfacing and oiling on the section between Odell Lake and the eastern terminus of the highway. The work performed during 1937 and 1938 has cost approximately \$570,000.

Fremont Highway, Oregon No. 31 and U. S. No. 395: In 1937, the U. S. Bureau of Public Roads, using federal forest highway money, resurfaced a section 16.24 miles in length between the west boundary of the Fremont National Forest and a place known as Horse Ranch. In 1938, the State further improved the same section by applying a light oil treatment. The State also regraded, surfaced and oiled a section 13.73 miles in length between Harris Creek and Chalk Cliff and surfaced and oiled a section 9.84 miles in length between Chalk Cliff and Paisley. Further south on the highway, the State oiled from the Chewaucan River to Chandler Park, a distance of 12.41 miles,

and the Bureau of Public Roads regraded from Chandler Park to White Rock, a distance of 7.81 miles. In August of 1938, the Bureau of Public Roads awarded a forest highway contract for the surfacing and oiling of the section between Chandler Park and White Rock, the work to be completed in 1939. Contracts awarded during the biennium for work on the Fremont Highway total \$270,000.

Klamath Falls-Lakeview Highway, Oregon No. 66: Work on the Klamath Falls-Lakeview Highway has consisted of a forest highway project on the Smalley Ranch-Enquist Ranch Section, under which 5.64 miles were graded and 4.02 miles were surfaced, and a federal aid secondary project on the Cottonwood Creek-Maddock Corner Section, under which 2.00 miles of grading work was performed. In August, 1938, work was started on a third project involving 10.17 miles of surfacing and oiling on the section between Bly Mountain Summit and Beatty. Work on this project is about fifty per cent complete at the end of the biennial period. Contracts awarded during the biennium for work on this highway total \$170,000.

Dairy-Bonanza Highway: This highway was oiled throughout its entire length (7.0 miles) in 1937. The cost of the work was \$10,500.

Pendleton-John Day Highway, U. S. No. 395: As a part of the federal forest highway program, a section, 7.1 miles in length, extending from Albee south to Ukiah was regraded, surfaced and oiled and a section 23.52 miles in length extending from Ukiah to Range was oiled. The cost of these two projects amounted to \$190,000.

Tualatin Valley Highway, Oregon Nos. 8 and 47: The section between Forest Grove and Hillsboro, 4.98 miles in length was regraded and repaved at a cost of \$127,500.

McMinnville-Tillamook Highway, Oregon Nos. 14 and 18: The work done on this section consisted of the reconstruction of the Bellevue-Pringle Corner Section north of Sheridan. The section is 2.82 miles in length and work done consisted of grading and concrete pavement construction. The cost of the project was \$113,500.



RECENTLY CONSTRUCTED SECTION OF PACIFIC HIGHWAY EAST IN OREGON CITY

Corvallis-Newport Highway, Oregon No. 26: Improvement work on the Corvallis-Newport Highway consisted of the oiling of a section 6.2 miles in length extending east from Toledo to the crossing of Simpson Creek. The section oiled was regraded and surfaced in 1936. The cost of oiling was \$17,500.

Siuslaw Highway, Oregon No. 36: The 16.21-mile section, extending from Rainrock to Greenleaf Creek, was oiled at a cost of \$30,000.

Salmon River Highway, Oregon No. 18: The portion of this highway which is between Otis and the Polk County Line has been resurfaced with a heavy bituminous macadam, the work having been financed with federal forest highway funds and performed under the direct supervision of the U. S. Bureau of Public Roads. The length of the project was 13.74 miles and the cost \$410,000.

Ochoco Highway, U. S. No. 28: On the Ochoco Highway, a section 2.42 miles in length, extending from the Ochoco Dam east to Mill Creek, has been regraded and surfaced at a cost of \$57,000.

Sherman Highway, U. S. No. 97: A section 10.65 miles in length, extending from a point about two miles north of the Sherman-Wasco County Line to a point about two miles south of Shaniko, has been resurfaced and oiled at a cost of \$120,000.

Umpqua Highway, Oregon No. 38: Work on the Umpqua Highway has consisted of the resurfacing and oiling of a section 8.2 miles in length, extending from Wilson Ranch (eight miles east of Reedsport) east to Scottsburg. The cost of this project was \$66,500.

John Day-Burns Highway, U. S. No. 395: On this highway, a section 7.09 miles in length, extending from Burns north to Poison Creek was surfaced at a cost of \$14,000.

Lakeview-Burns Highway, U. S. No. 395: The portion of this highway which is between Valley Falls and Cinder Butte was given a light oil treatment. The project was 84.2 miles in length and cost approximately \$120,000.

West Portland-Hubbard Highway: The work performed on this highway during the biennium consisted of 4.1 miles of

grading on the unit between Hubbard and Butteville and the construction of two grade separation structures, one near the Hubbard end of the highway and the other near the West Portland end. The cost of this work amounted to \$210,000.

Wolf Creek Highway, Oregon No. 2: At the close of 1938, the grading of the portion of the Wolf Creek Highway which is west of Sunset Camp is completed, giving a completely graded connection between the Oregon Coast Highway and the existing roads of the Willamette Valley. Crushed rock surfacing is complete, except on a unit 15.3 miles in length extending from a point two miles west of Sunset Camp to the village of Elsie. On that unit, the foundation course for the surfacing is in place and the surfacing will be constructed during 1939.

The construction of the highway has been carried on in part as a WPA project and in part as a Federal Aid project; the WPA portions being performed under the supervision of the Federal Government on a day-labor, relief-work basis and the federal aid portions being performed under the supervision of the State on a contract basis. There was expended on the WPA portion during 1937 and 1938, approximately \$1,525,000, of which the State contributed \$300,000. There was expended on the Federal Aid portion during the same period approximately \$385,000, of which the State contributed \$110,000.

Wilson River Highway, Oregon No. 6: Grading work on the Wilson River Highway has progressed to the point where only five miles remain to complete the grading from Tillamook to Glenwood where connection is made with existing roads leading to Forest Grove and Portland. Pavement and oiled surfacing is complete on the 18-mile unit between Tillamook and Jordan Creek and the foundation course for surfacing is in place on all but eleven miles of the 21-mile section between Jordan Creek and Glenwood. The grading work remaining to be done is very heavy and may not be completed in 1939.

The building of the portion of the highway which is west of Jordan Creek has been carried on as a federal aid project, and the portion east of Jordan Creek is being carried on as a WPA project. The federal aid portion has been performed under the supervision of the State on a contract basis. The WPA portion

is being performed under the supervision of the Federal Government on a day-labor relief basis. There was expended on the federal aid portion during 1937 and 1938 approximately \$187,000, of which the State contributed \$56,000. There was expended on the WPA portion during the same period approximately \$1,865,000, of which \$225,000 was contributed by the State and \$140,000 by Tillamook County, Washington County, Multnomah County and the City of Portland.

Secondary State Highways: The recent action of the Congress in extending the federal aid policy to include federal aid for secondary highway projects, and the availability of federal PWA funds for work on secondary highways, have given impetus to the improvement of secondary state highways and have made possible the undertaking of a number of secondary highway projects which otherwise could not have been given consideration.

The federal secondary highway program for the fiscal year 1938 included projects on the state secondary highway system totaling \$250,000, all of which were completed during the biennium. PWA projects on secondary state highways, for which contracts were let during 1937 and 1938, total \$535,000. Much of this program was not contracted until late in the fall of 1938, however, so actual performance of some of the work will carry over into 1939.

Typical of the federal aid secondary highway projects completed on secondary state highways are the bridge over the Walluski River on the Nehalem Highway east of Astoria; the oiling of the Klaskanie Summit-Jewell and Treharne-Buxton Sections of the Nehalem Highway in Clatsop, Columbia and Washington Counties; the grading, surfacing and oiling of the Spaulding Ranch Section of the Salem-Dayton Highway; the surfacing and oiling of the Eagle Point-Baker Gulch Section of the Little Butte Highway in Jackson County; the grading, surfacing and oiling of the Bloucher Section of the Hood River Secondary Highway in Hood River County; the grading, surfacing and oiling of the Grande Ronde River-Noyes Ranch Section of the Cove Highway in Union County; and the surfacing and oiling of the whole of the Hermiston-Cold Springs Highway in Umatilla County.

Typical of the PWA projects undertaken on secondary state highways are the Catching Slough Bridge east of Marshfield; the Shindler Bridge over Thomas Creek east of Scio; the grading, surfacing and oiling of the Umapine-Sunnyside Highway in Umatilla County; the paving of the Molalla Section of the Woodburn-Mt. Hood Highway; grading, surfacing and oiling of the Brownsville Section of the Halsey-Sweet Home Highway; grading of the Rock Creek-Morrow County Line Section of the Wasco-Heppner Highway; grading, surfacing and oiling of the Madras-Warm Springs Section of the Warm Springs Highway; and the oiling of the Mill City-Gates Section of the North Santiam Highway.

In addition to the improvements made with the cooperation of the Federal Government, improvements to the extent of \$350,000 have been financed during the biennium with state funds and without federal cooperation. Included in this group are the grading and surfacing of the Crawfordsville-Holley Section of the Halsey-Sweet Home Highway in Linn County; the resurfacing and oiling of the Empire-Marshfield Highway in Coos County; the grading of the Lombard-Killingsworth Section of the Lombard Street Secondary Highway in Multnomah County; the grading and surfacing of the Bend Section of the Century Drive Highway in Deschutes County; and the grading, surfacing and oiling of the Forest Boundary-Elgin Section of the Weston-Elgin Highway in Union County.

Federal Lands Highways: Improvement of those highways which are dependent largely on such federal appropriations as are made for highways through public lands other than forest lands, was delayed considerably this biennium due to failure of the Federal Government to make the expected appropriation for the fiscal year 1937, which situation resulted in there being available for the biennium only the \$168,367 appropriated for the fiscal year 1938.

The work accomplished with 1938 funds consisted of 16.5 miles of grading on the East Unit of the Jordan Creek Section of the I. O. N. Highway; 2.1 miles of grading on Miller Flat-Agency Section of the Warm Springs Highway; and 5.9 miles of surfacing and oiling on the Lake County Line-Gap Ranch Section of the Central Oregon Highway.

Secondary State Highways

During the 1931 session of the State Legislature, laws were enacted which provided for the establishment of a system of State Secondary Highways.

This Act and amendments enacted in the legislative sessions of 1933 and 1935 provided that each secondary highway placed on the system shall be mutually agreed upon by the State Highway Commission and the county court of the county in which the highway is located; both the county court and the Highway Commission adopting resolutions for the establishment of the road as a secondary highway. Any secondary highway or section of a secondary highway may be removed from the system in the same manner.

The Secondary Highway Act became effective on January 1, 1932, and on that date approximately 2,000 miles of roads were placed on the system. Since January 1, 1932, a number of additions have been made to the system and several secondary highways have been removed. The system at this time, including city streets, where the system extends into incorporated cities or towns, totals 2,287.35 miles.

The 1931 Law provided that the system was to be financed by State Highway revenues, and the funds therefor were to equal the amount which would be raised by a one-mill property tax levy, this amount being slightly in excess of \$1,000,000 per year. The funds were to be allocated to each county on the basis of each county's assessed valuation and each county's tax ratio, as established by the State Tax Commission, provided that not more than ten per cent of the total sum available could be expended in any one county in any year. The Act was amended in 1933 and a base of \$450,000 was established from which the allocation to the counties was to be made, the ratios to apply as in the original Act. This method of allocation is still in effect.

The original Act provided that the counties could perform construction, and maintain the secondary highways with county forces and be reimbursed by the State for the work performed. This part of the Act was repealed in 1933, and the Highway Commission is now responsible for construction and maintenance.

The 1931 Law provided that the counties should acquire rights of way when needed for improvement. An amendment passed by the session of 1935, relieved the counties of this obligation, and the State Highway Commission now acquires the right of way.

The base sum of \$450,000 for secondary highways proved to be inadequate, and this sum has been exceeded each year.

As State revenues for highway purposes increased, and as funds were provided by the various federal relief acts, a considerable program of construction, reconstruction, and betterment has been carried on.

The Federal Congress, in 1935, provided work relief funds for use by the states in the improvement of highways. The regulations under which these funds were to be expended required that at least twenty-five per cent of the funds available to a state for highway construction should be applied to the construction of secondary highways or feeder roads. In Oregon, a part of this twenty-five per cent was allocated to secondary state highways and the balance to county roads.

On June 16, 1936, Congress passed an Act providing for the establishment of a federal system of secondary or feeder roads, the total mileage of which, for any state, should not exceed ten per cent of the highway mileage of the State as indicated by the records at the time of the passage of the Federal Aid Act of 1921. The system may include any highway not on the primary federal highway system, whether it be a primary state highway, secondary state highway or a county road.

At the close of the period covered in this report, a partial system of Federal secondary or feeder roads has been adopted by the State Highway Commission and the Bureau of Public Roads, based largely on the results obtained by the Federal and State road inventory and planning survey.

The Federal Act requires that the funds available for the Federal secondary and feeder road program shall be matched on the same basis as applies to the matching of regular federal funds, namely: 38.74 per cent by the State to 61.26 per cent by the Federal Government. In Oregon, approximately 50 per cent

of the available funds are to be applied on secondary state highways and approximately 50 per cent on county roads.

The Act provides that the funds available for the years 1938 and 1939 should be distributed over at least 50 per cent of the counties in the State. The program as finally developed included projects in approximately 75 per cent of the counties.

The Federal funds available under the Emergency Relief Appropriation Act of 1935 were for the most part expended during this biennium. Of the program for the funds provided under the Act of June 16, 1936, and available for the years 1938 and 1939, approximately one-half was placed under contract during 1938.

Tabular data showing detailed information concerning the secondary highway expenditures made during the period covered by this report, the classification of the system as to types of improvement, and the mileages in each county, are given in other sections of this report.

Market Roads

The 1919 Market Road Act as passed by the State Legislature and subsequently approved by a referendum vote of the people created a system of farm to market roads, and provided for a fund to be used in aiding counties to construct and maintain the roads created. The Act provided for a one-mill state tax levy and provided further than monies from the fund thus created be apportioned for use by such counties as raised an equal amount by a special tax on the taxable property in the county. The system of market roads was designated by mutual agreement between the county courts and the State Highway Commission, the distribution of the State Market Road Fund was made by the State Highway Commission and the funds were expended by the county courts upon work handled under their supervision with the provision that the work be done on locations acceptable to, and to grades and standards approved by, the State Highway Commission.

On December 31, 1931, the market road system comprised 6,273.71 miles of roadway on which there had been expended, for construction and maintenance, a total of \$33,279,172.23, of which amount, \$12,722,069.80 had been provided by the state levies.

In 1931, the State Legislature amended the 1919 Market Road Act by repealing those sections of the Act which provided for the state one-mill market road levy and for supervision and approval by the State Highway Commission. The repeal of these sections did not abolish the market road system or repeal the authority of the counties to levy the special millage tax, but placed the responsibility for financing and controlling the system solely with the counties. The State Highway Commission, however, continues to supply engineering advice when such advice is requested by the county officials.

The mileage of market roads has been considerably reduced by reason of the transfer of some 2,000 miles to the system of state secondary highways. At the close of the present biennium (June 30, 1938) there are approximately 4,300 miles of roads remaining on the market road system.

The counties of the State report that during the period covered by this report, July 1, 1936 to June 30, 1938, they have expended \$1,069,557.43 for construction and maintenance work on market roads.

County Roads

During the first six months of the biennium (July 1, 1936, to December 31, 1936), the Commission had underway on county roads four Works Program Grade Separation Projects (WPGS Projects), and 21 Works Program Secondary Highway Projects (WPSO Projects), these projects having been undertaken under the provision of the federal regulations governing Works Program Projects which required that twenty-five per cent of the available funds be expended on county roads and on state highways not included in the federal aid system. There was expended on these projects during the biennium a total of \$842,798, of which approximately \$800,000 was federal money.

Shortly after the completion of the program of county road projects above referred to, the federal aid authorization for 1938 was made, and in that authorization there was included \$418,474 for projects on secondary highways, approximately one-half of which was available for use on county roads. This

money was made available on a matching basis, however, and with the match money added, the amount available for projects on county roads was \$350,000.

Of the seventeen projects selected to be undertaken with the \$350,000 referred to in the above paragraph, twelve were completed during 1938 at a cost of \$250,000. The remaining projects will be carried over for performance in 1939. Among the projects completed are 2.9 miles of surfacing and oiling on the Tillamook-Netarts Road in Tillamook County; 1.73 miles of grading, surfacing and bituminous macadam construction on the Thompson Road in Multnomah County; 3.3 miles of grading, surfacing and oiling on the Carver-Redland Road in Clackamas County; 3.3 miles of surfacing and oiling on the Salem-Independence Road in Marion County; 2.2 miles of grading and surfacing on the North Umpqua Road in Douglas County; 1.2 miles of grading, surfacing and oiling on the Chenoweth Road in Wasco County; and 3.4 miles of grading, surfacing and oiling on the Hurricane Creek Road in Wallowa County.

Expenditures made during the biennium for construction work on county roads totaled \$1,014,189.26.

Oregon is one of the few states that is matching federal secondary funds for county roads with its state highway revenues. Many of the states require the counties to match these funds with county money.

FINANCIAL REPORT

S. H. PROBERT, *Office Engineer*

Incomes and Disbursements, 1937 and 1938

The sources from which income has been received during the calendar years 1937 and 1938, and the amounts received from each, are as shown in accompanying Table XI.

The reduction of approximately \$2,400,000 in 1938 income as compared with 1937 income is due principally to the fact that during 1937 the collections of federal funds ran much higher than in 1938, a large part of them being carry-over collections from the large work relief program of 1936. Other items contributing to the reduction were: (1) reduction in short-term bond sales, \$250,000; (2) reduction in motor vehicle license fees, due to 1938 being the "off" year for operators' license fees, \$400,000.

Income from the gasoline tax was almost exactly the same in 1938 as it was in 1937, the increases in monthly receipts which obtained in the early part of 1938 having been off-set by decreases in the latter part of the year. The downward tendency during 1938 is shown by the following statement of monthly gasoline tax income.

TABLE X

Month Gasoline Was Consumed	Month Tax Was Transferred to Highway Fund	Net Amount Gasoline Tax Transferred to Highway Fund		Increase or Decrease
		1937	1938	
January	March	\$ 528,715	\$ 634,698	+\$105,983
February	April	513,674	587,523	+ 73,849
March	May	814,187	727,573	— 86,614
April	June	780,501	836,623	+ 56,122
May	July	883,973	871,539	— 12,434
June	August	901,441	941,995	+ 40,554
July	September	1,090,696	1,000,287	— 90,409
August	October	1,105,969	1,072,950	— 33,019
September	November	943,161	932,928	— 10,233
October	December	892,094	845,863	— 46,231
		\$8,454,411	\$8,451,979	—\$ 2,432

TABLE XI

Incomes for Calendar Years 1937 and 1938

<i>Source of Income</i>	<i>1937 (Actual)</i>	<i>1938 (Estimated)</i>
State Funds:		
Bond sales (six-month bonds)	\$ 1,000,000	\$ 750,000
Motor vehicle license fees (net)	2,904,902	2,500,000
Gasoline tax (net)	9,780,985	9,800,000
Motor transportation fees (net)	604,801*	827,000
Fines for traffic law violations	31,786	25,000
Interest on bank balances, etc.	660	.....
Totals	\$14,323,134	\$13,902,000
Less contributions to State Police	326,741	348,000
Less contributions to Counties	2,000,000	2,126,000
Less contributions to General Fund	75,324	.....
Total receipts of state funds for highway purposes	\$11,921,069	\$11,428,000
Cooperative Funds:		
1934-1935 federal funds	\$ 153,681	\$ 235,000
1936 federal Works Program funds	1,246,729	500,000
1936 federal aid funds	414,981	100,000
1936 federal lands funds	6,396	7,000
1937 federal aid funds	1,740,640	200,000
1938 federal aid funds	465,870	700,000
1938 federal lands funds	87,911	80,000
1938 federal secondary funds	49,546	120,000
1938 federal grade separation funds	125,930	300,000
1939 federal funds .....	.....	300,000
Federal grant funds (coast bridges)	267,745	8,000
Federal PWA funds	30,465	20,000
County cooperative funds	80,175	183,000
Miscellaneous cooperative funds	62,147	25,000
Total receipts of cooperative funds	\$ 4,732,216	\$ 2,778,000
Total, all receipts	\$16,653,285	\$14,206,000
Balance on hand, beginning of year	974,560	301,000
Total amount available for disbursement	\$17,627,845	\$14,507,000

* Amount here shown is the income from motor transportation fee collections made during first nine months of 1937. Income from last three months is credited in 1938.

The bond sales of \$1,000,000 in 1937 and \$750,000 in 1938, which are listed in Table XI as income items, were in reality only short-term loans (six months or less duration) made to enable the Commission to utilize, during the summer months, the excess income of the months of November and December.

The moneys thus moved ahead to the construction season were used to contract federal aid projects, with the result that, in 1937, work valued at \$2,500,000 was advanced one year and that, in 1938, work valued at \$1,750,000 was advanced the same extent. The 1937 loan was negotiated at an interest rate of 0.45 per cent, and the 1938 loan at a rate of 0.37 per cent. The interest cost was, therefore, practically negligible in amount.

A statement listing the disbursements made during 1937 and 1938 appears in Table XII. For some purposes, however, the following summarization of that table will be found more convenient.

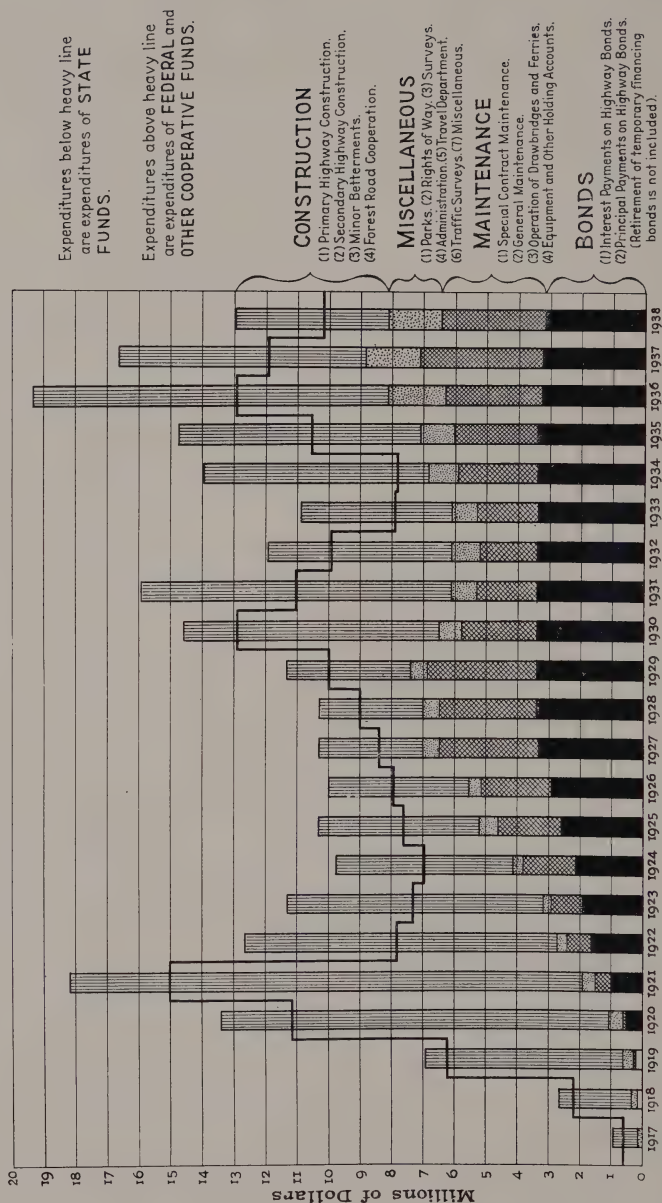
<i>Item</i>	<i>1937 (Actual)</i>	<i>1938 (Estimated)</i>
Bond interest and principal	\$ 3,784,228	\$ 3,978,000
Maintenance of highways	3,630,935	3,550,000
Construction of highways	7,904,574	5,060,000
Rights of way, parks, surveys, ad- ministration, tourist promotion and miscellaneous	2,007,607	1,640,000
Totals	<u>\$17,327,344</u>	<u>\$14,228,000</u>

From the above table, it can be ascertained that approximately 25 per cent of the total expenditure is for bond interest and principal and that approximately 25 per cent is for highway maintenance. About 40 per cent of the total is the portion left for highway improvement.

TABLE XII
Expenditures for Calendar Years 1937 and 1938

<i>Class of Expenditure</i>	<i>1937 (Actual)</i>	<i>1938 (Estimated)</i>
Construction Projects:		
1934-35 Federal Projects	\$ 171,298	\$ 93,000
1936 Works Program Projects	1,395,672	179,000
1936 FA and FLH Projects	495,265	46,000
1937 Federal Projects	2,716,121	293,000
1938 FA Projects	1,025,173	1,576,000
1938 FLH Projects	219,794	85,000
1938 FAS Projects	107,333	408,000
1938 FAG Projects	181,109	322,000
1939 Federal Projects		862,000
PWA Highway Projects	56,561	141,000
PWA Coast Bridge Construction	80,570	
WPA Wolf Creek and Wilson River	223,546	320,000
WPA Miscellaneous Projects	12,640	60,000
Primary State Construction	533,499	303,000
Secondary State Construction	211,301	133,000
Cooperation in Forest Road Work	112,500	Cr. 25,000
Minor Additions and Betterments (Primary)	205,450	160,000
Minor Additions and Betterments (Secondary)	121,708	100,000
Maintenance:		
Special Maintenance (Primary)	306,464	367,000
Special Maintenance (Secondary)	18,929	47,000
General Maintenance (Primary)	2,615,350	2,450,000
General Maintenance (Secondary)	634,124	625,000
Installation and Maintenance of County Road Signs ..	15,436	25,000
Operation of Drawbridges and Ferries	40,633	40,000
Miscellaneous:		
State Parks	45,454	125,000
Rights of Way, Patrol Stations, etc.	672,506	676,000
Equipment Holding Account	262,584	Cr. 50,000
Other Holding Accounts	51,878	
Bond Principal and Interest (Long-term)	3,283,109	3,176,000
Bond Principal and Interest (Short-term)	501,119	802,000
Administration and Supervision (General)	378,119	400,000
Surveys (Primary Highways)	235,768	200,000
Surveys (Secondary Highways)	39,148	35,000
Traffic Surveys (State)	79,076	75,000
Increase in Revolving Fund	75,000	
Miscellaneous General Expense	69,369	59,000
Radio Communication System (PWA)	35,034	
Travel and Information Bureau	98,704	120,000
Totals	\$17,327,344	\$14,228,000

STATE HIGHWAY EXPENDITURES - 1917 - 1938



Anticipated Income for 1939 and 1940

The predicting of the incomes that may be expected during the years 1939 and 1940—the determining of whether they will be greater than in 1938, or less—is a matter of judgment. Economic conditions will, of course, control, but economic conditions are no easier to predict than the income itself. Probably the best indicator is the tendency reflected in the monthly income from the gasoline tax. The rate of increase in that tax, as shown by a comparison of each month with the same month a year earlier, reached a maximum of 18 per cent in June of 1936. Since then, the rate of increase has declined steadily, falling to 8 per cent in June, 1937, and to 0 per cent in about May of 1938. Since May, 1938, the decline has continued with the result that the collections instead of increasing are decreasing. How long this decrease will continue is problematical, of course, but, in the face of the decrease, it would appear to be unsafe to anticipate greater income in 1939 and 1940 than was received in 1938. Many people feel, however, that economic conditions in general are improving and that the decline in gasoline tax will run itself out early in 1939. Being guided to some extent by that feeling, the Commission has taken a median position by predicting that the incomes for 1939 and 1940 will be neither greater nor less than in 1938. Accordingly, the statement of anticipated income which appears in Table XIII, has been prepared on that basis. The cooperative fund incomes included in that table are, of course, based upon quite different and more definite considerations, which make their determination more positive.

The fact that the income from motor vehicle license fees is estimated \$400,000 less for 1940 than for 1939, is accounted for by the fact that the drivers' licenses, the fees for which are included with the motor vehicle license fees, are issued for a two-year period and that a much greater number of them are issued in odd numbered years than are issued in even numbered years.

TABLE XIII

Anticipated Income for Calendar Years 1939 and 1940

<i>Source of Income</i>	1939	1940
State Funds:		
Motor vehicle license fees (net)	\$ 2,900,000	\$ 2,500,000
Gasoline tax (net)	9,850,000	9,850,000
Motor transportation fees (net)	850,000	850,000
Fines for traffic law violations	30,000	30,000
Totals	\$13,630,000	\$13,230,000
Less contributions to State Police	348,000	348,000
Less contributions to counties	2,073,000	2,140,000
Total estimated receipts of state funds for highway purposes	\$11,209,000	\$10,742,000
Cooperative Funds:		
1934-35 federal funds	\$ 42,000	\$
1936 federal Works Program funds	305,000	10,000
1936 federal aid funds	47,000	.....
1937 federal aid funds	83,000	.....
1938 federal aid funds	826,000	100,000
1938 federal secondary funds	229,000	20,000
1938 federal grade separation funds	112,000	50,000
1939 federal funds	1,300,000	1,310,000
1940 federal funds .....	.....	850,000
Federal PWA funds	600,000	60,000
County cooperative funds	4,000	4,000
Total estimated receipts of cooperative funds	\$ 3,548,000	\$ 2,404,000
Total, all estimated receipts	\$14,757,000	\$13,146,000
Balance on hand, beginning of year	279,000	750,000
Sub-total	\$15,036,000	\$13,896,000
Less unavoidable balance at end of year	* 750,000	* 750,000
Total amount available for disbursement	\$14,286,000	\$13,146,000

* This unavoidable balance comes about through the receipt of gasoline tax on December 20th, too late to be utilized in the program of the current year. It was utilized in 1937, and again in 1938, to repay temporary loans made earlier in the year with repayment at the end of the year contemplated. No temporary loans are planned for 1939 and 1940.

Expenditure Budget for Years 1939 and 1940

The expenditure budget which appears in Table XIV calls for an expenditure of \$14,275,000 in 1939, and \$13,145,000 in 1940. The fact that these amounts are below the amounts expended in 1937 and 1938 is due primarily to the fact that the budget contemplates no sales of temporary bonds such as were made in 1937 and 1938, which, in turn, eliminates (except for \$450,000 in 1939) the temporary bond repayments which had to be made in 1937 and 1938. The rather large reduction below 1937 expenditures occurs principally in the construction expenditure. In 1937, the large federal relief programs were still in operation, making possible the carrying on of a much larger construction program than will be possible in 1939 and 1940.

Approximately 25 per cent of the amount budgeted for expenditure during 1939, will be paid from monies contributed by the federal government. Of the 75 per cent to be paid from state moneys, more than one-fourth will be required to pay principal and interest on bonds and nearly one-third will be required for highway maintenance.

It will be noted from the information contained in the budget that no expenditure of 1940 federal moneys is to be made during 1939 and that less than one-half of the 1940 federal aid program is to be completed even in 1940. It will be noted also that no part of the 1941 federal aid program is to be undertaken in 1940. When it is considered that the 1940 federal money is available in January, 1939, and that the 1941 federal money is available in January, 1940, it becomes apparent that the State is quite considerably in arrears in its federal aid work. This situation is due entirely to a lack of state funds with which to promptly match the available federal aid funds. It supports very definitely the contention that present state highway revenues are inadequate.

TABLE XIV

Expenditure Budget for Calendar Years 1939 and 1940

<i>Class of Expenditure</i>	<i>1939</i>	<i>1940</i>
Construction Projects:		
1936 Works Program Projects	\$ 10,000	\$
1938 FA Projects	780,000	80,000
1938 FAS Projects	196,000	.....
1938 FAG Projects	156,000	60,000
1939 Federal Projects	2,619,000	1,701,000
1940 Federal Projects .....	.....	1,700,000
1941 Federal Projects .....	.....	.....
PWA Highway Projects	1,287,000	.....
WPA Wolf Creek & Wilson River	340,000	340,000
WPA Miscellaneous Projects	10,000	10,000
Primary State Construction	30,000	200,000
Secondary State Construction	55,000	200,000
Cooperation in Forest Road Work .....	.....	.....
Minor Additions and Betterments (Primary)	175,000	200,000
Minor Additions and Betterments (Secondary)	125,000	150,000
Maintenance:		
Special Maintenance (Primary)	75,000	400,000
Special Maintenance (Secondary)	25,000	50,000
General Maintenance (Primary)	2,550,000	2,650,000
General Maintenance (Secondary)	650,000	700,000
Installation & Maint. of County Road Signs	10,000	10,000
Operation of Drawbridges and Ferries	50,000	50,000
Miscellaneous:		
State Parks	100,000	100,000
Rights of Way, Patrol Stations, etc.	600,000	600,000
Bond Principal and Interest (Long-term)	2,777,000	2,759,000
Bond Principal and Interest (Short-term)	450,000	.....
Administration and Supervision (General)	400,000	400,000
Surveys (Primary Highways)	175,000	175,000
Surveys (Secondary Highways)	35,000	35,000
Traffic Surveys (State)	25,000	25,000
Miscellaneous General Expense	50,000	50,000
Contingency Reserve, Construction	250,000	250,000
Contingency Reserve, Maintenance	150,000	150,000
Travel and Information Bureau	120,000	100,000
Totals	\$14,275,000	\$13,145,000

Federal Cooperation

Federal Aid: During the period covered by this report, federal funds for highway construction purposes were apportioned to Oregon as follows:

TABLE XV

Date of Congressional Act	Designation	Total Authorization to the Several States	Oregon's Allotment
June 16, 1936	1938 Regular federal aid funds	\$125,000,000	\$ 2,092,368
June 16, 1936	1938 Federal secondary highway funds	25,000,000	418,474
June 16, 1936	1938 Grade separation funds	50,000,000	588,377
June 16, 1936	1938 Federal lands highway funds	2,500,000	168,367
June 16, 1936	1939 Regular federal aid funds	125,000,000	2,048,413
June 16, 1936	1939 Federal secondary highway funds	25,000,000	409,683
June 16, 1936	1939 Grade separation funds	50,000,000	565,844
June 16, 1936	1939 Federal lands highway funds	2,500,000	167,394
	Totals	\$405,000,000	\$ 6,458,920

Regular federal aid funds and secondary highway funds are apportioned among the states, one-third in proportion to population, one-third in proportion to area, and one-third in proportion to mileage of rural delivery and star mail routes. Grade separation funds are apportioned among the states, one-half in proportion to population, one-fourth in proportion to mileage in the federal aid highway system, and one-fourth in proportion to mileages of railroads. Federal lands highway funds are apportioned only to states in which more than five per cent of the total area is "unappropriated or unreserved public lands, nontaxable Indian lands, or other Federal reservations other than forest reservations." The apportionment among those states is in proportion to the area of federal lands of the classes above mentioned.

The federal funds are not turned over to the states in advance of construction. Instead, they are paid to the states in the form of reimbursement during and after the period that the work is in progress. They are paid only on projects for which the plans have been previously approved by the U. S. Bureau of Public Roads and for which the work is conducted in accordance with the applicable requirements established by the

Secretary of Agriculture and the Bureau of Public Roads. The percentages of total cost to which the federal aid is limited are as follows:

<i>Class of Funds</i>	<i>Limit of Federal Cooperation</i>	
	<i>Basic</i>	<i>For Oregon</i>
Regular federal aid funds	50%	61.26%
Federal secondary highway funds	50%	61.26%
Federal grade separation funds	100%	100.00%
Federal lands highway funds	100%	100.00%

Oregon's variation from the basic limit above indicated comes about through a provision which grants higher rates of cooperation to those states in which unappropriated public lands comprise more than five per cent of the total area. The increase in percentage of cooperation accruing through this provision is equal to one-half of the percentage of public land in the State. In Oregon, the percentage of public land is 22.52 per cent. Therefore, the increase in percentage of cooperation is 11.26 per cent.

Federal cooperation in the percentages above stated does not apply to all costs involved in construction projects, but is limited to certain "participating" items. Non-participating items, the cost of which must be borne by the State without cooperation, include rights of way, surveys, use of state-owned equipment, and, under certain conditions, extra work items, temporary construction and overruns of estimates. Actual collections of federal aid are, therefore, considerably below the percentages stated.

Federal aid apportioned to a state must be placed under contract within one year after the close of the fiscal year for which the apportionment is made. Amounts not so contracted revert to the federal government to be redistributed among all of the states. Under this arrangement, the State has about three years in which to use the apportionment for a given year. For instance the apportionment for the fiscal year 1940 may be used any time during the calendar years 1939, 1940 and 1941. In Oregon, each apportionment is used as early during the three-year period as the availability of state match funds will permit. State highway revenues have not been sufficient,

however, to match the federal funds as rapidly as the federal funds have become available, and, as a result, the contracting of the federal aid work has been gradually falling behind. Where in earlier years the Commission was able to have its federal aid work performed during the first of the three years during which the federal funds were available, the Commission is now barely able to have the work performed during the second of the three years. Unless state highway revenues are materially increased, 1941 will see the Commission barely able to finance the performance of its federal aid work in time to avoid loss of the federal funds. In the interim, the inability of the State to promptly match its federal aid is holding back, for from one to two years, the construction of several millions of dollars worth of highway improvement that the people of the State might otherwise be having the use of.

Regular Federal Aid Funds: Regular federal aid funds can be applied only on permanent improvement projects on highways included in the Federal Aid Highway System, the mileage of which system is limited to eight per cent of the total miles of public roads existing in the State as of November 9, 1921. A list of the Oregon Highways included in the federal aid system is given on another page of this report.

Regular federal aid funds for 1940 and 1941 will be materially less than for 1938 and 1939. The authorization bill has already been passed by Congress and estimates based on the total amounts authorized indicate that Oregon's allocations will be approximately \$1,631,000 for 1940 and \$1,876,000 for 1941.

Federal Secondary Highway Funds: Federal secondary highway funds are available for use only on state highways not included in the regular federal aid system and on county roads of such importance that their inclusion in the federal secondary highway system (which is to be designated at a later time) can reasonably be expected. It has been indicated to the Commission that when the secondary system is adopted, the mileage for Oregon will be limited to 4,182 miles. In Oregon, approximately 50 per cent of the federal secondary money is available for use on state highways to be included in the system and the

TABLE XVI
Mileages of Federal Aid Highways

Federal Route No.	Highway	Total Federal Aid Mileage Within Cities and Reservations	Mileage Within Cities of 2,500 or More	Mileage Within National Forests	Mileage Within Indian Reservations	Total Federal Aid Mileage Within Cities and Reservations
1	Astoria to Ontario	518.90	31.89	27.97	① 23.93	435.11
2	Oregon Coast Highway	394.02	10.24	45.74	② 0.29	337.75
3	Pacific Highway	337.85	23.12	7.53	.....	307.20
4	The Dalles-California Highway	283.11	4.73	20.17	43.53	214.68
5	Eugene to Ontario	384.55	.....	75.94	.....	308.61
6	Arlington to Rock Creek	123.63	.....	.....	.....	123.63
7	La Grande to Enterprise	66.25	.46	.....	.....	65.79
8	Heppner Junction to Pendleton ③ .....	.....	.....	.....	.....	.....
9	Pacific Highway West	116.04	13.34	.....	.....	102.70
10	Albany-Corvallis Highway	10.50	.65	.....	.....	9.85
11	McMinnville-Tillamook Highway	47.90	.....	13.44	.....	34.46
12	Sherman Highway	69.00	.....	.....	.....	69.00
13	Ft. Klamath to Crater Lake	7.72	.....	0.99	0.98	5.75
14	Coos Bay-Roseburg Highway ..	61.81	0.29	.....	.....	61.52
15	Green Springs Highway	62.15	0.98	1.57	.....	59.60
16	Fremont Highway	157.71	.....	14.25	.....	143.46
17	Redwood Highway	42.34	.....	0.59	.....	41.75
18	Umatilla-Wallula	19.71	.....	.....	.....	19.71
19	Pendleton-Washington State Line	36.60	.....	.....	.....	36.60
20	Umpqua Highway	50.13	.....	10.91	.....	39.22
21	Bend to Burns	131.71	2.59	.....	.....	129.12
22	Corvallis-Newport Highway	56.91	.99	.....	.....	55.92
23	Salmon River Highway	21.92	.....	.....	.....	21.92
24	Portland-Maupin	98.78	6.62	37.04	.....	55.12
25	Siuslaw Highway	67.32	.....	17.60	.....	49.72
26	East Portland-Oregon City	19.51	9.36	.....	.....	10.15
27	Wolf Creek Highway	65.52	2.31	.....	.....	63.21
28	Cannon Beach Road	20.96	.....	.....	.....	20.96
29	Willamette Highway	87.17	.....	64.35	.....	22.82
30	Pendleton to John Day	122.15	1.73	16.67	.....	103.75
31	Burns to Vale	114.97	1.01	.....	.....	113.96
32	Tualatin Valley Highway	42.36	1.82	.....	.....	40.54
33	Klamath Falls-California Line ..	14.30	.....	.....	.....	14.30
34	Boyer to Dolph	5.60	.....	4.90	.....	0.70
35	Tillamook to Banks	54.32	0.48	.....	.....	53.84
36	Pendleton-Cold Springs Highway	18.50	.....	.....	.....	18.50
37	Santiam Highway	101.30	0.48	53.53	.....	47.29
38	Fourth Street entrance to Portland ④ .....	.....	.....	.....	.....	.....
39	Base Line Road	15.40	4.58	.....	.....	10.82
40	Lombard Street	10.90	7.90	.....	.....	3.00
41	82nd Avenue	13.30	5.78	.....	.....	7.52
42	West Portland-Hubbard Highway	17.50	.....	.....	.....	17.50
	Totals	3,890.32	131.35	413.19	68.73	3,277.05

① Includes 1.84 miles in Celilo Canal Reserve

② Cape Perpetua Lighthouse Reserve

③ Withdrawn from Federal Aid System

④ Included in Route No. 9

The federal secondary highway funds for the fiscal years 1940 and 1941 are expected to be \$245,000 per year. It will be noted that this is much less than the annual amount for the years 1938 and 1939.

Grade Separation Funds: Federal grade separation funds are available for grade separations, grade crossing elimination and grade crossing protection work on all classes of highways, public roads and streets, there being no limitation to any particular system or systems of roads or streets. The funds must be so utilized, however, that each main line railroad in the State benefits in approximate proportion to the mileage of railroad operated.

Oregon's allotment of grade separation funds for the fiscal year 1940 is expected to be about \$226,000, and for 1941 about \$340,000. The allotment for each of the years 1938 and 1939 was \$565,844.

Federal Lands Highway Funds: Federal lands highway funds can be used only for work on unappropriated or unreserved public lands, non-taxable Indian lands, or other federal reservations other than forest reservations. The locations in Oregon at which these funds can be used advantageously are in the public land areas in the far southeastern portion of the state, in the Warm Springs Indian Reservation and the Klamath Indian Reservation. Use of the funds has been confined, so far, to the I. O. N. Highway in Malheur County, the Central Oregon Highway in Harney County, the Warm Springs Highway in Jefferson County and the Klamath Falls-Lakeview Highway in Klamath County. The I. O. N. Highway and the Warm Springs Highway are being constructed almost exclusively with federal lands highway funds.

Federal lands highway allocations have suffered an even greater reduction for 1940 and 1941, than have the other classes of federal aid funds. In 1940, the allocation will be only about \$67,000, as compared with \$167,394 for 1939. The 1941 allocation will be somewhat higher, but is not expected to exceed about \$134,000.

Forest Highway Work

The federal appropriations for forest highways in Oregon, applicable to the fiscal years 1938 and 1939, were \$1,254,717 and \$1,254,044, respectively. These amounts were available for contracting during the calendar years 1937 and 1938. Construction work accomplished during this period consisted of 4 miles of grading, 27 miles of regrading and widening, 36 miles of surfacing, 16 miles of resurfacing, 54 miles of oiling, and 14 miles of bituminous macadam.

The allotments of forest highway funds to Oregon since 1916 total \$20,361,849.89. Of this amount, \$15,141,269.58 have been expended on state highways, to which have been added \$5,290,653.49 of state funds and \$2,366,559.08 of county funds, bringing the total amount expended for forest highway construction work on state highways to \$22,798,482.15. This total expenditure has resulted in the completion of 680 miles of grading, 92 miles of regrading and widening, 736 miles of rock surfacing, 50 miles of resurfacing, 138 miles of oiling and 89 miles of bituminous macadam.

The annual forest highway program is agreed upon by a joint conference of representatives of the U. S. Bureau of Public Roads and the National Forest Service with the State Highway Commission, and is submitted to the Secretary of Agriculture for approval. All forest highway engineering and construction is handled by the Bureau of Public Roads. Also, all contracts are made by the government. County and state cooperative funds are paid to the government as required during the progress of the work. The use of state or county money, for forest highway construction, is not mandatory.

Forest highway funds are expended on county roads as well as state highways. Examples of this may be found on the North Santiam Highway in Marion and Linn counties, which highway has received allotments of forest funds in excess of \$900,000 during the last four years.

It is customary for the government to maintain sections constructed as forest roads for two years after the completion of the contracts, after which the state, in the case of state highways, and the county, in the case of county highways, must assume the obligation of maintenance.

The more important forest highway projects of the biennium on the state highway system are:

<i>Highway</i>	<i>Section</i>	<i>Kind of Work</i>
Columbia River	Ruckel Creek-Cascade Locks	Grading
Salmon River	Otis-Polk County Line	Bituminous macadam
Santiam	Snow Creek-Toll Creek	Grading
Willamette	Tunnel and Approaches	Grading
Tiller-Trail	Trail Creek Section	Grading and bridge
Tiller-Trail	Douglas County Line-Trail Creek	Surfacing and oiling
Fremont	W. Forest Boundary-Horse Ranch	Surfacing
Fremont	Chandler Park-White Rock	Surfacing and oiling
Klamath Falls-Lakeview	Smalley Ranch-Enquist Ranch	Grading and Surfacing
Klamath Falls-Lakeview	Drews Reservoir Section	Grading and surfacing
Pendleton-John Day	Albee-Ukiah	Grading and surfacing
Pendleton-John Day	Beech Creek-Forest Boundary	Grading and surfacing
John Day-Burns	Bear Creek Summit Section	Grading
Enterprise-Lewiston	Shelton Ranch-E. Buford Creek	Grading

TABLE XVII
Oregon Forest Highway System

<i>For. Rd. No.</i>	<i>State No.</i>	<i>Name</i>	<i>Termini</i>	<i>Length in Miles</i>
1	32	McMinnville-Tillamook ..	Hebo-East Forest Boundary	13.9
2	39	Salmon River	Oregon Coast Highway-West Polk County Line	13.7
3	9	Oregon Coast	Neskowin-Siletz River	23.0
4	181	Siletz River	Oregon Coast Highway-Forest Boundary ..	6.0
5	9	Oregon Coast	Yaquina Bay-Umpqua River	68.7
6	27	Alsea	Waldport-Benton County Line	28.4
7	34	Siuslaw	Oregon Coast Highway-Blachly	45.1
8	45	Umpqua	Reedsport-Scottsburg	16.4
9	9	Oregon Coast	Douglas County Line-Hauser	9.8
10	9	Oregon Coast	Port Orford-Gold Beach	31.3
11	25	Redwood	O'Brien Schoolhouse-State Line	5.4
12	25	Redwood	Summit Hayes Hill-Love Station	2.0
13	38	Oregon Caves	3 miles West of Forest Boundary to Caves..	11.5
14	.....	Applegate (County Rd.) ..	Ruch-Watkins	17.0
15	1	Pacific	Canyonville—2¾ miles South of Forest Boundary	11.0
16	230	Tiller to Trail	Tiller to Trail	26.2
17	22	Crater Lake	Trail-Park Boundary	44.0
18	22	Crater Lake	Dalles-California Highway-Park Boundary ..	7.7
19	4	Dalles-California	Crescent-Old Fort Klamath	57.8
20	424	Sand Creek	Dalles-California Highway-Park Boundary ..	4.3

TABLE XVII—Continued

For. Rd. No.	State No.	Name	Termini	Length in Miles
21	18	Willamette	Lowell to Dalles-California Highway	72.0
22	15	McKenzie	Blue River to Sisters	51.3
23	16	Santiam	1 mile East of Foster to Sisters	69.9
24	.....	North Santiam (County Road)	Niagara-Santiam Highway	43.2
25	26	Mount Hood	West Forest Boundary to Wapinitia Junct.	15.4
26	44	Wapinitia	Mt. Hood Highway to 1 mile North of Wapinitia	32.9
27	41	Ochoco	4 miles West of West Forest Boundary to North Forest Boundary	19.3
28	2	Columbia River	West Forest Boundary to East Forest Boundary	27.9
29	19	Fremont	West to East Forest Boundary	16.2
30	20	Klamath Falls-Lakeview	West to East Forest Boundary	29.8
31	19	Fremont	4 miles South of Valley Falls to 6 miles North of Lakeview	13.0
32	321	Heppner-Spray	Mouth of Chapin Creek to John Day Highway	26.3
33	28	Pendleton-John Day	2½ miles Northwest of Albee to Range	30.7
34	28	Pendleton-John Day	Long Creek-South Forest Boundary	20.5
35	48	John Day-Burns	John Day-Burns	*69.5
36	5	John Day	Prairie City-Unity	42.6
37	330	Weston-Elgin	McDougall's Camp to Summerville-Elgin Road	23.2
38	11	Flora-Enterprise	State Line to South Forest Boundary	30.3
39	350	Little Sheep Creek	West Forest Boundary to Imnaha	8.8
40	.....	Baker-Cornucopia (County Rd.)	Carson to Cornucopia	5.0
41	.....	Loop-Dalles (County Road)	Mt. Hood Highway to East Forest Boundary	15.0
42	360	Warm Springs	Wapinitia Highway Junction-Forest Boundary	7.0
43	§	Diamond Lake	Union Creek to Dalles-California Highway via Diamond Lake	38.9
44	.....	Williams Creek (County Rd.)	Applegate Highway to Oregon Caves Highway	20.0
45	9	Oregon Coast	North Forest Boundary to South Forest Boundary between Hebo and Beaver ...	1.0
46	†	Cascade Lakes	North Boundary of Crater Lake Park to Bend	101.0
47	.....	North Umpqua (County Road)	Rock Creek to Cascade Lakes Highway	60.0
48	421	Klamath Lake-West Side	Forest Boundary East of Gardner Peak to Forest Boundary South of Odessa Ranger Station	20.0
49	26	Mount Hood	Wapinitia Junction-North Forest Boundary	21.5

* Includes 2.5 miles on the Central Oregon Highway.

§ State Secondary Highways 233 and 425.

† Includes State Secondary Highways 232 and 372.

TABLE VIII
Federal Aid Funds and Forest Road Funds Apportioned
to Oregon June 30, 1939

The following table shows the total federal aid funds and forest road funds apportioned to Oregon under the various federal aid acts:

Period for Which Funds Are Apportioned	Federal Aid Funds	Forest Road Funds	Total
Total of prior apportionments*	\$21,702,346.80	\$12,091,292.89	\$33,793,639.69
Act of July 21, 1932:			
July 21, 1932, to June 30, 1933			
Emergency construction highway funds	2,001,740.00	773,121.00	2,774,861.00
Federal lands funds	130,705.00		130,705.00
Act of June 16, 1933:			
July 1, 1933, to June 30, 1934			
National recovery highway funds	6,106,896.00	2,126,751.00	8,233,647.00
National recovery federal lands funds	335,141.00		335,141.00
Act of June 18, 1934:			
July 1, 1934, to June 30, 1935			
National recovery highway funds	3,097,814.00	967,688.00	4,065,502.00
National recovery federal lands funds	170,861.00		170,861.00
July 1, 1935, to June 30, 1936			
Federal lands funds	174,331.00		174,331.00
Federal aid funds	2,044,633.00	954,042.00	2,998,675.00
July 1, 1936, to June 30, 1937			
Federal aid funds	2,045,078.00	940,194.00	2,985,272.00
Act of April 8, 1935:			
July 1, 1935, to June 30, 1936			
Works program highway funds	3,038,642.00		3,038,642.00
Works program grade crossing funds	2,334,204.00		2,334,204.00
Act of June 16, 1936:			
July 1, 1937, to June 30, 1938			
Federal aid funds	2,092,368.00	1,254,717.00	3,347,085.00
Secondary or feeder road funds	418,474.00		418,474.00
Grade crossing elimination funds	588,377.00		588,377.00
Federal lands funds	168,367.00		168,367.00
July 1, 1938, to June 30, 1939			
Federal aid funds	2,048,413.00	1,254,044.00	3,302,457.00
Secondary or feeder road funds	409,683.00		409,683.00
Grade crossing elimination funds	565,844.00		565,844.00
Federal lands funds	167,394.00		167,394.00
Act of June 8, 1938:			
(Approximate only)			
July 1, 1939, to June 30, 1940			
Federal aid funds	1,631,000.00	900,000.00	2,531,000.00
Secondary or feeder road funds	245,000.00		245,000.00
Grade crossing elimination funds	226,000.00		226,000.00
Federal lands funds	67,000.00		67,000.00
July 1, 1940, to June 30, 1941			
Federal aid funds	1,876,000.00	1,165,000.00	3,041,000.00
Secondary or feeder road funds	245,000.00		245,000.00
Grade crossing elimination funds	340,000.00		340,000.00
Federal lands funds	134,000.00		134,000.00
Totals	\$54,405,311.80	\$22,426,849.89	\$76,832,161.69

* For the detail of yearly allotments prior to 1933, see former reports of the State Highway Commission.

Public Works Administration (PWA) Projects

It was the policy of the Commission during the biennium to undertake PWA projects only in connection with work which would otherwise have had to be done entirely at state expense. Projects which could be included in federal aid programs were so included, as the percentage of federal cooperation was higher for federal aid projects than for PWA projects. However, many projects necessarily constructed by the Commission cannot be included in the federal aid programs because of ineligibility or lack of federal funds of the class required. Such projects ordinarily have to be financed entirely with state funds, but when PWA funds are available, it is sometimes possible to obtain PWA cooperation. This situation obtained in connection with a number of projects which had to be undertaken during the biennium, and those projects were accordingly handled as PWA projects.

Applications were made in 1936 for PWA cooperation on 21 projects of the kind above described, but, due to exhaustion of PWA funds shortly after the applications were made, only three of the projects were cleared and placed under contract. In 1938, additional funds were made available for PWA work, but, in the meantime, most of the projects for which application had been made in 1936, had been provided for in some other manner. A few of the projects remained, however, and for them the applications were renewed. Applications were submitted, also, for several additional projects, including a number of special maintenance projects (rock production projects and light oiling projects). Altogether, 40 projects were submitted, and, of the group 37 were approved. The approvals came rather late in the 1938 season, and, although all of the projects were contracted and underway before the end of the year, only a few of them were completed during 1938.

The estimated cost of the PWA projects contracted during 1938 was \$1,200,000, of which amount approximately \$500,000 will be paid by the federal government. Utilization of PWA funds in connection with this work, all of which would otherwise have had to have been paid for from state funds, will, therefore, result in a saving to the State of approximately a half million dollars.

The following is a listing of all PWA projects (Coast Bridge Projects excepted), undertaken by the Highway Commission. The first three of the listed projects were contracted in 1936. All others were contracted in 1938.

<i>County</i>	<i>Highway</i>	<i>Section and Description of Work</i>
Benton	Alsea-Deadwood	Alsea-South Fork Section. Two bridges, grading and surfacing. \$45,055.
Baker	Medical Springs	Miles Bridge Section. Bridge, grading and surfacing. \$13,780.
Various	State-wide	Radio Net Work. \$70,345.
Coos	Coos River	Catching Slough Section. Bridge and grading. \$71,500.
Linn	Albany-Lyons	Fleming Ranch-Shindler Bridge Section. Bridge, grading and surfacing. \$51,000.
Umatilla	Sunnyside-Uma- pine	Umapine-Sunnyside Section. Grading, surfacing and oiling. \$38,300.
Gilliam	Wasco-Heppner	Rock Creek-Morrow Co. Line Section. Grading. \$35,600.
Clackamas	Woodburn-Mt. Hood	Molalla Section. Paving. \$13,500.
Linn	Halsey-Sweet Home	Brownsville Section. Grading, surfacing and oiling. \$24,200.
Jefferson	Warm Springs	Vanora-Madras Section. Surfacing and oiling. \$83,500.
Baker	Baker-Homestead	Richland-Halfway Section. Surfacing and oiling. \$61,000.
Douglas	Pacific	South Dillard Bridge Section. Bridge, grading and paving. \$130,900.
Coos	Cape Arago	Charleston-Miner Creek Section. Grading and surfacing. \$37,900.
Jefferson	The Dalles- California	Madras-Deschutes Co. Line Section. Rock production. \$13,300.
Josephine & Jackson	Williams and Med- ford-Provolt	Powers Ranch-Jacksonville Section. Rock production. \$12,400.
Sherman	Sherman	Moro-Wasco Co. Line Section. Rock production. \$15,200.
Linn	Santiam	Lebanon-Foster Section. Rock production. \$11,900.
Lincoln	Oregon Coast and Corvallis-New- port	Newport Section. Rock production. \$12,000.
Clatsop	Nehalem	Olney-Jewell Section. Rock production. \$11,300.
Marion	Silver Creek Falls and North Santiam	Shaw Junction-Gates Section. Grading, surfacing, oiling and rock production. \$41,000.
Morrow	Oregon-Washing- ton	Gilliam Co. Line-Ione Section. Rock production. \$10,600.

PWA PROJECTS—Continued

<i>County</i>	<i>Highway</i>	<i>Section and Description of Work</i>
Umatilla	Old Oregon Trail	Hermiston Section. Rock production. \$12,600.
Grant	John Day	Butte Creek Summit-Branson Creek Section. Rock production. \$19,900.
Wheeler	John Day	Flat Creek-John Day Section. Rock production. \$19,000.
Malheur	Central Oregon and John Day	Juntura-Cairo Section. Oiling and rock production. \$64,700.
Baker	John Day	Grant Co. Line-Unity Section. Surfacing, oiling and rock production. \$51,300.
Coos	Oregon Coast and Coos Bay-Rose- burg	Coquille Section. Rock production. \$21,700.
Lane	McKenzie	Rough Creek-Belknap Springs Section. Rock production. \$44,500.
Lane	Siuslaw	Greenleaf-Cheshire Section. Rock production. \$28,200.
Lake	Fremont and Klamath Falls-Lakeview	Lakeview Section. Rock production. \$17,500.
Deschutes	McKenzie, Santiam and McKenzie- Bend	Sisters Section. Rock production. \$18,900.
Deschutes	Central Oregon	Horse Ridge-Brothers Section. Rock production. \$9,900.
Hood River	Mt. Hood	Polallie Creek-Hood River Section. Rock production. \$10,700.
Klamath	The Dalles-California	Crescent-Beaver Marsh Section. Rock production. \$16,500.
Lake	Fremont	Horse Ranch-Chewaucan Narrows Section. Rock production. \$15,500.
Klamath & Lake	Klamath Falls-Lakeview	Devils Garden-Quartz Mtn. Section. Grading, surfacing, oiling and rock production. \$106,000.
Klamath	Klamath Falls Building	District Maintenance office and storage shed. \$21,500.
Deschutes	Brothers Building	District Maintenance office and storage shed. \$19,300.
Harney	Suntex Building	District Maintenance office and storage shed. \$20,700.
Linn	Albany Building	District Maintenance office and storage shed. \$14,100.

Works Progress Administration (WPA) Projects

Since July 1, 1935, the federal government has continued to make WPA funds available for expenditure on various kinds of public works. The primary purpose of the Works Progress Administration expenditures has been to provide employment for the largest possible number of persons on the public relief rolls, but a secondary consideration has been to assist in the realization of the completion of worthy projects that will be of use and benefit to the public in general.

In attempting to realize the objectives outlined above, the WPA has found it expedient to impose certain restrictions. In order to give relief work to the largest possible number of persons, they have limited the amount a relief employee may earn in any one month. This restriction automatically limits the number of hours any relief employee may work during any one month. These restrictions necessitate either a systematic turn-over of relief employees or the closing down of the project for a period of time each month. In addition, the general policy of the WPA has been to require that approximately 70% of all funds expended on any one project be in direct payment for relief labor. This leaves only 30% of the total expenditures available for the rental of equipment and purchase of materials and supplies. The WPA will furnish one-third of the money required for these later expenditures, thus placing WPA cooperation at 80% of the total expenditures on any one project.

It is required that each project be sponsored by some local governmental body such as a state, county or municipality, and that the sponsor shall cooperate in expenditures to the extent of the difference between the total expenditure and the WPA cooperative share. This difference, as brought out above, amounts to approximately 20% of the total cost. All work is performed under the jurisdiction of, and under the condi-

tions and restrictions imposed by the Works Progress Administration, but projects may be halted or terminated at any time, either by the sponsor or by the WPA.

The State Highway Commission, in a spirit of friendly cooperation, has undertaken the sponsorship of such projects as will be of mutual benefit and will in no way be detrimental to the best interests of the State. Highway improvement projects normally require that a considerable percentage of total expenditures be made for rental of equipment and purchase of materials and supplies, while WPA regulations require that only a small percentage of total expenditures be made for these items, and in turn necessitate the nearly exclusive use of hand labor. There are, however, a limited number of highway projects of types which can be executed under the restrictions outlined above with a reasonable degree of efficiency.

The classes of work which can be most effectively performed under the imposed conditions consist of clearing and grubbing, roadside clean-up, drainage improvement, slope protection, landscaping, and, in some cases, building construction. The State Highway Commission has undertaken the sponsorship of several projects consisting of one or more of the classes of work outlined above, and, in doing so, has furnished all required engineering services and the greater part of required materials and supplies.

Extensive clearing and grubbing projects and extensive grading and surfacing projects, have been undertaken on the Wolf Creek and Wilson River Highways, and considerable progress has been made toward the eventual completion of these two arterials. Considerable landscaping and drainage improvement work has been completed in various parts of the State. Work of this kind has been carried on more intensively near the larger centers of population. A new division office building, which also houses the State Police, maintenance headquarters, etc., has been constructed on McLoughlin Boulevard near the southeast city limits of Portland. The grounds of this building, as well as the grounds of several maintenance buildings throughout the State have been landscaped.

The following expenditures have been made during the period July 1, 1936, to June 30, 1938:

Project	State Share	WPA Share	Total
Landscaping artificial lakes at Eugene	\$ 2,046.79	\$ 2,642.36	\$ 4,689.15
Maintenance building at The Dalles	6,471.51	3,221.29	9,692.80
Corbett masonry retaining wall in Multnomah County	989.76	2,207.00	3,196.76
Oneonta Gorge snow fence and retaining walls in Multnomah County	3,697.82	41,590.99	45,288.81
Retaining wall, Bonneville-Eagle Creek	1,926.54	21,672.84	23,599.38
Powell Boulevard drainage east of Portland	2,340.97	26,320.41	28,661.38
Storm sewer on Sandy Boulevard in Portland	7,869.03	88,469.78	96,338.81
Landscaping Canyon Road in Portland	3,669.90	41,282.74	44,952.64
Landscaping at east end of Ross Island bridge in Portland	1,520.34	17,096.41	18,616.75
Landscaping, entrance to Gresham	61.33	687.65	748.98
Landscaping, Ross Island Bridge-17th Avenue in Portland	1,412.02	10,257.89	11,669.91
Powder, equipment rentals and engineering on Wilson River Highway: Jordan Creek-Washington County Line, Tillamook County	136,103.08	1,191,555.84	1,327,658.92
County Line-Glenwood, Washington County	54,239.68	714,700.17	768,939.85
Powder, equipment rentals and engineering on Wolf Creek Highway: Sunset Camp-Rock Creek, surfacing temporary road	6,162.47	31,456.89	37,619.36
Quartz Creek-Bare Mountain, Clatsop County	55,843.62	285,010.80	340,854.42
Bare Mountain-Washington County Line, Clatsop County	72,146.77	359,897.70	432,044.47
Tillamook County Line-Sunset Camp, Washington County	63,287.48	432,302.32	495,589.81
Sunset Camp-Buxton, Washington County	7,719.95	44,286.54	52,006.49
Barnes Road-Multnomah County Line, Washington County	17,738.67	373,548.04	391,286.71
Roadside clean-up, St. Helens Road, M. P. 3 to M. P. 18.7	1,403.05	9,378.42	10,781.47
Drainage tunnel and slide control on 4th Street and Barbur Boulevard	1,499.78	38,457.91	39,957.69
Right of way improvement on Barbur Boulevard, Sheridan Street, South	814.83	5,492.95	6,307.78
Champoeg State Park	1,601.77	10,236.29	11,838.06
Building and landscaping, Portland Division Office	23,555.19	41,697.73	65,252.92
Surveys for proposed projects in Multnomah County	1,401.19	.....	1,401.19
Totals	\$ 475,523.54	\$3,793,470.97	\$4,268,994.51

REPORT OF CONSTRUCTION DEPARTMENT

H. G. SMITH, *Construction Engineer*

Reconnaissance Surveys

Before any major location or relocation survey is started, a thorough reconnaissance survey is made. This consists of a careful study of the entire area between the proposed terminals to determine and locate all natural and artificial control points in order that the most feasible and economical route be found. After the field work is finished, a complete written report is submitted on the routes investigated, which report is accompanied by maps, profiles and estimates of cost. These surveys expedite the work of the locating parties and eliminate the possibility of adopting inferior routes. During the biennium, reconnaissance surveys have been made between Baker and Middle Bridge, Pacific Highway and Wren (Kings Valley Highway), Saddle Mt. Park Road, Cannon Beach Junction and Cannon Beach, Horse Ridge Section of the Central Oregon Highway, Sisters and Bend, Eugene and Oakland, Wasco County Line and Deschutes County Line (The Dalles-California Highway), Chemult and Modoc Point, Goshen and Lowell, Monroe and Anlauf (Territorial Highway), Salt Creek and Lookout Point (Willamette Highway), Siletz and Toledo and Salem and Mehama.

Location Surveys

All location surveys have been supervised by the Construction Department through Chief Locating Engineer H. W. Libby. Refinements in location have kept pace with the demands of the motorists and the improvement in automotive construction. Two years ago several of the more conservative states felt that the standards in Oregon were unreasonably high and instead of improving the alignment, the automobiles should be controlled by artificial means so that a definite speed could not be exceeded. The Special Committee on Administrative Design Policies of the American Association of State Highway Officials recently adopted standards almost identical with those in use by the Oregon State Highway Department so that Oregon's position is fully vindicated and the state is fortunate that no lower standards of designs were considered. R. H. Baldock, State

Highway Engineer, has been a member of this committee which has spent considerable time and thought toward making uniform standards of location and design for all highways in the United States. Under this plan, standard highways will be classified according to volume and character of traffic and the design details, such as curvature, width and grade, varied accordingly. H. W. Libby, Chief Locating Engineer, is an appointed member of the Committee on Design of the American Association of State Highway Officials.

All major location and relocation surveys are being made by specialized locating parties, and the following have been made during the biennium: Flagstaff Hill-Middle Bridge, Skipanon Overcrossing, North Bend-Marshfield-Coquille, City of Bandon, Crooked Creek-Prineville, Mill Creek-Marks Creek (Ochoco Highway), Roseburg-Rock Creek (North Umpqua River County Road), Oakland-Roseburg-Kelley Corner Madras-Terrebonne, Crooked Creek-Williamson River-Modoc point, Brownsville-Crawfordsville, Gates-Niagara, Boardman-Stanfield, Lombard Street-Sandy Boulevard and North Yamhill River-Lafayette.

Construction Practices

Paul Van Scoy, Assistant Construction Engineer, has been placed in charge of soil investigation with a view of eliminating unstable subgrades and preventing slides. In the design of a highway the wearing surface, height of grade line, side slopes of cuts, drainage problems and even the alignment itself are all affected by the types of soil which make up the surface of the country traversed. During construction, a knowledge of the soils and their characteristics enables the engineer to improve upon methods of surface drainage and to secure more permanent and better compacted fills by various methods of placement influenced by the study of the soil characteristics. As the stability of a wearing surface depends largely upon subgrade, knowledge of characteristics of soils will prevent unstable material being used in the subgrade and will result in a marked reduction in surface failures. A great deal of research work has been carried on throughout the United States recently with respect to soil characteristics. This eventually will lead to a marked reduction in subgrade failures.

H. G. Smith, Construction Engineer, has been appointed a member of the Committee on Road Construction of the American Association of State Highway Officials.

Subbases

The use of subbases or rock ballast underneath all types of pavements and surfacing has not been changed. The construction technique has been improved so that this ballast has become very cheap and is without doubt the most effective means which can be devised in this state to afford the necessary stability to the subgrade.

Pavement Widths

The use of 11-foot lanes, or a width of 22 feet for a 2-lane highway, has become common practice on the main highways. Lanes of this or greater width are now almost universal throughout the United States and the 20-foot pavement is no longer considered adequate. On Interstate Avenue in Portland, the north and south bound traffic has been separated by a concrete island of sufficient width to allow pedestrians to stop in the middle of the street. This barrier extends across many of the unimportant side streets so that left-hand turns are prevented and intersectional collisions minimized.

Pavement Construction

This year has seen a material improvement in the standard practice of concrete pavement construction with the adoption of the tubular vibrator and the introduction of the Johnson Finishing Machine. The use of these machines practically completes the mechanization of concrete pavement construction and eliminates all the uncertainties and irregularities caused by hand finishing. They permit a flexibility of operation greatly needed to counteract the varying weather conditions, and it is felt the results obtained by their use have been highly successful. The smooth surface finishing has been discarded in favor of deep transverse brooming. This produces a more non-skid surface and diffuses the light reflection from the on-coming cars so that the glare so frequently found on concrete pavements has been practically eliminated. Visibility on the section of pavement laid this year from Junction City to

Eugene will be found much superior to that on pavements laid in former years.

A joint committee of the Pacific Coast states of Oregon, Washington and California has submitted a recommendation to the Bureau of Public Roads advising the elimination of dowel bars across contraction joints and recommending that the standard of spacing for expansion joints be varied to suit local conditions.

Construction Costs

Prices on contract work have materially decreased in the biennium due to the improvements in construction equipment and to increased skill in the use of this equipment. Rock crushing plants have been very greatly improved by the use of larger crushers and more portable plants.

Roadside Improvement

The roadside improvement and beautification program undertaken in 1934 has been carried forward and developed by continuous, successive steps. The need of and the returns to be realized from such a program are becoming more and more apparent. Roadside beautification and preservation of natural beauty is now given full consideration from the beginning of the reconnaissance survey to the completion of the construction contract. Locations and designs are made with the objective of fitting the finished roadway into the terrain along the line of least resistance. Selective tree trimming and cutting has been employed, cutbanks have been rounded and cut and fill slopes have been shaped so as to flow into the existing contours with as few breaks as possible. Top soil is saved and placed over new cut and fill slopes. Selective seeding and planting has become an integral part of the general plan in an attempt to bring the existing terrain and its vegetation out to the highway rather than to cut it off at the right of way line.

A part of the roadside improvement work is carried out in conjunction with general highway construction projects. In addition, regular specific roadside improvement projects are executed. Allocations for these projects are made from year to year at the ratio of one per cent of the combined state and federal monies allocated during the year for highway construction purposes. Projects to be included on any annual program

are selected and designated by the Highway Commission on a basis of merit. Detailed plans and specifications are prepared, bids are received, and awards are made to the lowest responsible bidders.

The type of treatment employed varies with the district in which the project is located. Portland, representing the largest metropolitan area in the state, has numerous examples of the types and classes of work performed. The new super-highway approaches to Portland, which include the East Portland-Oregon City Section of the Pacific Highway-East and the Barbur Boulevard Section of the Pacific Highway-West are examples of semi-formal treatments as applied to approaches and entrances to cities and towns. The Canyon Road Section of the Tualatin Valley Highway exemplifies not only beautification work but also extensive construction work in an attempt to stabilize hillside embankments and to control the destructive forces of nature. Formal plantings and their applications are exemplified by the treatments applied to the plaza at the east approach of the Ross Island Bridge, the area adjacent to the Milwaukie Avenue Undercrossing, and the Milwaukie Civic Center.

Roadside oases and rest areas have been constructed in desert areas along the Old Oregon Trail at Castle Rock and Boardman. This type of treatment is especially applicable in the semi-arid regions of the state where there are long unbroken stretches of highway entirely devoid of trees. Definite areas are planted to trees, the soil is seeded and an irrigation system is provided.

The treatment applied to the portals of the Tooth Rock tunnel is an outstanding example of benefits to be derived by blending structures into the natural surroundings. In this instance the old conventional type of portal has been discarded in favor of the new type constructed of materials native to the area and along such lines as will harmonize with and flow into the existing contours.

The treatments developed for the approaches and abutments to the Oregon Coast Bridges involved the gathering and planting of native trees, shrubs and vines. Special emphasis was placed on the healing of unavoidable construction scars and the use of native plants aided in recreating the natural beauty of

the construction scene, thus placing the bridge approaches and abutments in a natural and close relationship with the adjoining areas.

Roadside improvement work has kept pace with highway reconstruction work by being conducted in conjunction with and in some cases in addition thereto. Work of a special nature has been prosecuted in connection with borrow pits on the Junction City-Eugene Section of the Pacific Highway. Special treatments and selective plantings have transformed these otherwise unsightly holes into attractive artificial lakes which appear to be an integral part of the general landscape.

Grounds of the new division headquarters at Portland and of various maintenance and shop headquarters throughout the state have received appropriate landscape treatments. In addition to the work outlined above, the department has planned and supervised the landscaping work on the grounds of the new state capitol and library buildings.

The Landscape Engineer, George H. Otten, is an employee of the Construction Department and supervises the preparation of plans for and the execution of roadside improvement work.



ROSS ISLAND BRIDGE PLAZA IN PORTLAND. WPA LANDSCAPING PROJECT

REPORT OF MAINTENANCE DEPARTMENT

J. N. BISHOP, *Maintenance Engineer*

General Summary

Highway maintenance consists of such work as is necessary to keep the highways and their appurtenances in good condition and to minimize structural depreciation to the maximum extent possible.

As a matter of convenience for departmental purposes, maintenance is separated into two classes: (1) special maintenance and (2) general maintenance. The term "special maintenance" is applied to those features involving major maintenance operations which are carried on either by contract or large state force crews. Crushed rock or gravel surfacing in sufficient quantities to restore the macadam surface to a condition equal to the original construction and the production of crushed rock or gravel materials for maintenance are examples of this class of work. Some states class the above work as stage construction, but since it replaces the loss of capital investment, it is properly chargeable to maintenance. This class of work does not include larger jobs which involve the constructing of deep foundations of crushed rock or gravel to reinforce sections which have proven inadequate to carry traffic and the placing of considerably more material than was included in the original construction, which work is properly termed "betterment".

General Maintenance

The term "general maintenance" covers the class of work conducted solely by state forces, the major part of which is performed by section crews with permanently established headquarters. It applies also to some work performed by special travelling crews, operating independently of the section crews, such as paving plant crews, centerline striping crews, sign crews, bridge crews and oiling crews, having temporary headquarters in the town nearest the work being performed.

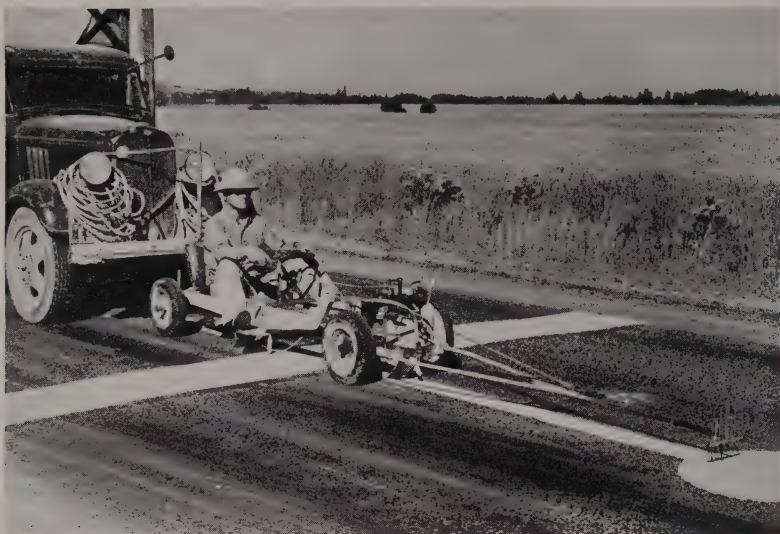
There are now 122 section crews performing routine section maintenance throughout the state. Each crew consists of a foreman, a foreman's helper and as many laborers, truck drivers, grader operators, etc. as may be necessary. The crews

average about six men each. Each crew has an established headquarters located as centrally in the district as possible. At this time the equipment of sixty of these crews is housed in state-owned buildings and additional state-owned quarters are being constructed as rapidly as funds will permit.

At this time there are eight pavement patching crews engaged during the summer months in the patching of bituminous road surfaces. This type of work was started in 1923 with one plant which laid a total of 2,163 tons of bituminous concrete that season at an average cost of \$15.72 per ton. During the past year, with eight crews working, there was laid 60,020 tons at an average cost of \$6.14 per ton. The increased tonnage has been made necessary by the increase in the mileage of bituminous surfaces and the increase in the volume of traffic, particularly heavy freight trucking and log hauling. The mileage of bituminous surfacing has increased from 684 miles in 1923 to 3,502 miles in 1938. The decrease in the cost per ton of bituminous concrete is due not so much to lower prices for raw materials as to changes and improvements made in the design of the plants and to the development of more efficient methods of operations. The pavement patching crews operate directly under the supervision of the Maintenance Superintendent for the district in which they are operating.

The sign department is under the direct supervision of an Assistant Maintenance Engineer and includes the work of seven sign crews working on state highways, two sign crews placing and maintaining directional signs on county roads, six center line striping crews and one electrical crew.

During the past year the center line striping crews painted approximately 5,067 miles of center line at an average cost of \$20 per mile. The painting is done by machines designed and built in the department's Salem shops. When this type of work was first inaugurated a few years ago, the cost was approximately \$40 per mile, but improvements in the design of the machine and increased efficiency in the execution of the work have materially reduced the cost. The lacquers used for painting the center stripes are manufactured in accordance with formulas developed in the State Highway Department's



MACHINE FOR PAINTING CENTER LINE STRIPES



TYPICAL CENTER LINE STRIPE ON OLD OREGON TRAIL
EAST OF STANFIELD

testing laboratories. The total cost of the striping work performed during 1938, including the painting of the railway crossing signs, pedestrian lanes, school slow signs and other markers which are painted directly on the pavement was \$107,000.

Each of the seven sign crews working on state highways is assigned to a definite territory in which it installs such additional signs as may be required and performs such repainting, replacing and repair work as may be necessary. During 1938 one of the principal activities of the sign crews was the replacement of unreflectorized warning and caution signs with reflectorized signs. For this purpose 303,000 reflector buttons were purchased during the past year.

Two of the sign crews are engaged continuously in installing and maintaining directional signs on county roads. For this purpose approximately \$20,000 was expended in 1938.

The installation and maintenance of automatic electric signals at hazardous intersections, and the installation and maintenance of lighting facilities for the illumination of tunnels, bridges, etc. is taken care of by the electrical crew. During 1938, \$11,000 was expended for signals and \$7,200 for illumination.

As an aid in its work, the Maintenance Department operates a radio network, the object of which is to enable more close cooperation between the widely scattered forces of the department, particularly during times of emergency when the normal means of communication are interrupted or are not dependable. The maintenance, development and operation of the radio network are under the supervision of a radio technician reporting to the Maintenance Engineer. The radio equipment is operated by various personnel of the department who are primarily officemen or maintenance equipment operators and have passed federal examinations as required by the Federal Communications Commission.

The radio network consists of a total of 25 stations, 16 of which are stationary and nine are on automotive equipment. Of the 16 fixed stations, three have a power of 1000 watts

(Salem, La Grande, Klamath Falls); two are 500-watt stations (Portland and Bend); seven are 100-watt stations (Astoria, The Dalles, Burns, Pendleton, Medford, Roseburg and Coquille); and four are 10-watt stations (Eugene, Grants Pass, Baker and Government Camp). The nine mobile stations are all 10-watt stations. The stations at Portland, Salem, Klamath Falls and La Grande are also radio telegraph stations.

During the past year an optician has been engaged to test the eyesight of all employees in the Maintenance Department whose duties require them to operate motorized equipment over the State Highways, and all operators who fail to meet the required tests are forbidden to operate motorized equipment until their visual defects have been corrected.

Itemized statements showing the "per mile" costs of maintenance for both the primary and the secondary highway systems, during each of the calendar years 1936 and 1937, and showing also the total mileage of each system maintained, appear in accompanying tables.

All maintenance operations are carried on under the supervision of J. N. Bishop, Maintenance Engineer, who is assisted by W. W. Stiffler and W. O. Widdows, Assistant Maintenance Engineers and Watson Townsend, Maintenance Office Engineer.

TABLE XIX—MAINTENANCE TABLE "A"
Costs of Maintaining Primary State Highways
Calendar Year 1936

Item	General Maintenance Charges	Special Maintenance Charges	Total Maintenance Charges	Miles Main- tained	Cost Per Mile
(1) SURFACING					
Concrete Pavement	\$ 22,401.43	\$	\$ 22,401.43	250	\$ 90
Asphalt Pavement	105,918.81	.....	105,918.81	580	183
Bituminous Macadam					
(a) Patch and Retreat	193,815.09	.....	193,815.09	918	211
(b) Stockpile Material		48,740.12	48,740.12	.....	.....
Oiled Macadam					
(a) Patch and Retreat	553,517.39	.....	553,517.39	1,656	334
(b) Stockpile Material		115,304.77	115,304.77	.....	.....
(c) New Oiling Rock		62,254.03	62,254.03	.....	.....
Untreated Macadam and Graded					
(a) Blade and Gravel	194,496.78	.....	194,496.78	1,156	168
(b) Stockpile Material		2,906.66	2,906.66	.....	.....
(2) SHOULDERS					
Patching and Retreating	58,603.17	.....	58,603.17	.....	.....
(a) Stockpile Material		8,980.00	8,980.00	.....	.....
Blading	77,390.30	.....	77,390.30	.....	.....
Sodding	388.14	.....	388.14	.....	.....
(3) DRAINAGE					
Ditches	170,808.00	.....	170,808.00	.....	.....
Drains	2,299.36	.....	2,299.36	.....	.....
Culvert Cleaning	10,725.23	.....	10,725.23	.....	.....
(4) STRUCTURES					
Bridges Under 20'	15,827.29	.....	15,827.29	.....	.....
Bridges over 20' in Length	108,646.61	.....	108,646.61	.....	.....
Guard Fences and Sight Posts	19,285.79	.....	19,285.79	.....	.....
Pipe Culverts	3,902.22	.....	3,902.22	.....	.....
Tunnels	1.00	.....	1.00	.....	.....
(5) ROADSIDE					
Cutting and Burning					
Weeds and Brush	89,747.49	.....	89,747.49	.....	.....
Removal of Debris	27,677.28	.....	27,677.28	.....	.....
Highway Beautification	5,093.54	.....	5,093.54	.....	.....
Slide Removal and Cut Sloping	65,677.01	.....	65,677.01	.....	.....
Fills: Replace and Widen ..	32,129.33	.....	32,129.33	.....	.....
Right of Way Fence	301.33	.....	301.33	.....	.....
Right of Way Markers	27.39	.....	27.39	.....	.....
Slope Protection	253.97	.....	253.97	.....	.....
(6) TRAFFIC SERVICE					
Traffic Signals					
Signs and Hwy. Markers	33,410.35	.....	33,410.35	.....	.....
Traffic Lines	69,131.80	.....	69,131.80	.....	.....
Snow Removal	152,063.93	.....	152,063.93	.....	.....
Mile Posts	210.10	.....	210.10	.....	.....
Sanding Pavements	22,163.29	.....	22,163.29	.....	.....
Flagging, Patrolling, etc.	4,377.80	.....	4,377.80	.....	.....
Highway Illumination					
Supervision	70,590.80	.....	70,590.80	4,560	15
Total	\$2,110,882.02	\$ 238,185.58	\$2,349,067.60	4,560	\$ 515



REMOVING SNOW WITH THREE-AUGER ROTARY ON MT. HOOD HIGHWAY



FRONT VIEW OF THREE-AUGER ROTARY SNOW REMOVER

TABLE XX—MAINTENANCE TABLE “B”
Costs of Maintaining Primary State Highways
Calendar Year 1937

Item	General Maintenance Charges	Special Maintenance Charges	Total Maintenance Charges	Miles Main- tained	Cost Per Mile
(1) SURFACE					
Concrete Pavement	\$ 32,094.65	\$	\$ 32,094.65	297	\$ 108
Asphalt Pavement	197,625.44	.....	197,625.44	581	340
Bituminous Macadam					
(a) Patch and Retreat	242,611.99	.....	242,611.99	1,082	224
(b) Stockpile Material ....	.....	87,416.36	87,416.36	.....	.....
Oiled Macadam					
(a) Patch and Retreat	612,590.11	.....	612,590.11	1,683	364
(b) Stockpile Material ..	.....	179,303.57	179,303.57	.....	.....
(c) New Oiling Rock .....	.....	9,008.72	9,008.72	.....	.....
Untreated Macadam and Graded					
(a) Blade and Gravel	179,058.28	.....	179,058.28	947	189
(2) SHOULDERS					
Patching and Retreating	74,671.04	.....	74,671.04	.....	.....
(a) Stockpile Material ....	.....	12,781.81	12,781.81	.....	.....
Blading	77,306.48	.....	77,306.48	.....	.....
Sodding	1.34	.....	1.34	.....	.....
(3) DRAINAGE					
Ditches	167,137.36	.....	167,137.36	.....	.....
Drains	4,943.15	.....	4,943.15	.....	.....
Culvert Cleaning	14,243.13	.....	14,243.13	.....	.....
(4) STRUCTURES					
Bridges 20' and Under	15,954.25	.....	15,954.25	.....	.....
Bridges over 20' in Length ..	154,936.93	17,953.28	172,890.21	.....	.....
Guard Fences and Sight Posts	25,215.82	.....	25,215.82	.....	.....
Pipe Culverts	2,512.27	.....	2,512.27	.....	.....
Tunnels	16.22	.....	16.22	.....	.....
(5) ROADSIDE					
Cutting and Burning					
Weeds and Brush	85,802.58	.....	85,802.58	.....	.....
Removal of Debris	37,814.70	.....	37,814.70	.....	.....
Highway Beautification	3,148.33	.....	3,148.33	.....	.....
Slide Removal and Cut Sloping	92,086.49	.....	92,086.49	.....	.....
Fills: Replace and Widen ..	42,151.77	.....	42,151.77	.....	.....
Right of Way Fence	399.57	.....	399.57	.....	.....
Right of Way Markers	56.39	.....	56.39	.....	.....
Slope Protection	1,198.44	.....	1,198.44	.....	.....
(6) TRAFFIC SERVICE					
Traffic Signals	554.46	.....	554.46	.....	.....
Signs and Hwy. Markers	68,748.39	.....	68,748.39	.....	.....
Traffic Lines	76,441.10	.....	76,441.10	.....	.....
Snow Removal	285,060.90	.....	285,060.90	.....	.....
Mile Posts	203.47	.....	203.47	.....	.....
Sanding Pavements	37,717.54	.....	37,717.54	.....	.....
Flagging, Patrolling etc.	4,055.66	.....	4,055.66	.....	.....
Highway Illumination	1,518.46	.....	1,518.46	.....	.....
Supervision	83,117.18	.....	83,117.18	4,591	18
Total	\$2,620,993.89	\$ 306,463.74	\$2,927,457.63	4,591	\$ 638

TABLE XXI—MAINTENANCE TABLE "C"
Costs of Maintaining Secondary State Highways

Calendar Year 1936

Item	General Maintenance	Miles Main- tained	Cost Per Mile
(1) SURFACE			
Concrete Pavement	\$ 4,464.97	36.5	\$ 122.32
Asphalt Pavement	12,335.51	115.2	107.08
Bituminous Macadam	1,051.71	24.9	42.23
Oiled Macadam	91,763.29	327.1	280.53
Untreated Macadam and Earth Roads	140,990.71	1,344.5	104.86
(2) SHOULDERS			
Shoulders	9,557.24	.....	.....
(3) DRAINAGE			
Drains and Ditches	48,532.85	.....	.....
(4) STRUCTURES			
Culvert and Bridges Under 20 Feet	12,803.43	.....	.....
Bridges Over 20 Feet	47,051.91	.....	.....
Pipe Culverts	4,528.08	.....	.....
Guard Fences and Sight Posts	2,290.02	.....	.....
(5) ROADSIDE			
Cutting and Burning Weeds and Brush	21,612.62	.....	.....
Removal of Debris	4,551.03	.....	.....
Highway Beautification	29.13	.....	.....
Slide Removal and Cut Sloping	15,627.42	.....	.....
Embankment Replacing and Widening	6,682.84	.....	.....
Right of Way Fence	9.57	.....	.....
Seeding and Planting for Slope Protection ..	2.69	.....	.....
(6) TRAFFIC SERVICE			
Signs and Highway Markers	10,873.06	.....	.....
Traffic Lines	5,177.32	.....	.....
Snow Removal	15,984.64	.....	.....
Mile Posts	3.76	.....	.....
Sanding Slippery Pavements	672.45	.....	.....
Flagging, Patrolling, Towing, etc.	692.43	.....	.....
Supervision	15,696.37	2,039.0	7.70
Total	\$*472,985.05	2,039.0	\$ 231.96

* Includes \$2,957.47 expended for maintenance of county roads.

TABLE XXII—MAINTENANCE TABLE "D"
Costs of Maintaining Secondary State Highways
Calendar Year 1937

Item	General Maintenance Charges	Special Maintenance Charges	Total Maintenance Charges	Miles Main- tained	Cost Per Mile
(1) SURFACE					
Concrete Pavement	\$ 3,191.53	\$	\$ 3,191.53	50	\$ 64.00
Asphalt Pavement	21,391.85	.....	21,391.85	115	186.00
Bituminous Macadam					
(a) Patch and Retreat	3,483.45	.....	3,483.45	5	696.00
(b) Stockpile Material .....	.....	.....	.....	.....	.....
Oiled Macadam					
(a) Patch and Retreat	151,329.39	.....	151,329.39	484	313.00
(b) Stockpile Material .....	.....	2,774.72	2,774.72	.....	.....
Untreated Macadam					
(a) Blading and Graveling	182,301.64	.....	182,301.64	1,315	139.00
(b) Stockpile Material .....	.....	16,154.68	16,154.68	.....	.....
(2) SHOULDERS					
Patching and Retreating	3,555.46	.....	3,555.46	.....	.....
Blading	6,192.74	.....	6,192.74	.....	.....
Sodding	67.79	.....	67.79	.....	.....
(3) DRAINAGE					
Ditches	39,935.19	.....	39,935.19	.....	.....
Drains and Drainage Tunnels	1,234.09	.....	1,234.09	.....	.....
Culvert Cleaning	4,243.39	.....	4,243.39	.....	.....
(4) STRUCTURES					
Bridges 20' and Less	11,853.95	.....	11,853.95	.....	.....
Bridges over 20' in Length	48,511.08	.....	48,511.08	.....	.....
Guard Fences and Sight Posts	1,967.50	.....	1,967.50	.....	.....
Pipe Culverts	2,506.59	.....	2,506.59	.....	.....
Tunnels .....	.....	.....	.....	.....	.....
(5) ROADSIDE					
Cutting and Burning Weeds and Brush	22,800.01	.....	22,800.01	.....	.....
Removal of Debris	9,236.79	.....	9,236.79	.....	.....
Highway Beautification	58.67	.....	58.67	.....	.....
Slide Removal and Cut Sloping	28,436.14	.....	28,436.14	.....	.....
Fills: Replace and Widen	12,388.24	.....	12,388.24	.....	.....
Right of Way Fence	118.20	.....	118.20	.....	.....
Right of Way Markers .....	.....	.....	.....	.....	.....
Seeding and Planting for Slope Protection	49.96	.....	49.96	.....	.....
(6) TRAFFIC SERVICE					
Traffic Signals .....	.....	.....	.....	.....	.....
Signs and Highway Markers	9,618.18	.....	9,618.18	.....	.....
Traffic Lines	6,465.98	.....	6,465.98	.....	.....
Snow Removal	40,374.67	.....	40,374.67	.....	.....
Mile Posts	34.10	.....	34.10	.....	.....
Sanding Slippery Pavements	1,699.53	.....	1,699.53	.....	.....
Flagging, Patrolling, Towing etc.	908.82	.....	908.82	.....	.....
Highway Illumination	59.22	.....	59.22	.....	.....
Supervision	20,109.38	.....	20,109.38	2,192	10.00
Totals	\$634,123.53	\$ 18,929.40	\$653,052.93	2,192	\$ 298.00

TABLE XXIII
Unit Costs of Re-oiling—1936

Specifi- cation	Miles Oiled	Cost per Mile		Cost per Square Yard	
		Rock Cost Included	Rock Cost Excluded	Rock Cost Included	Rock Cost Excluded
0-31	113.88	\$ 533.00	\$ 402.00	\$.050	\$.038
0-30	252.19	853.00	639.00	.081	.061
0-11	6.75	2,852.00	2,014.00	.270	.191
0-10	2.00	1,655.00	1,227.00	.157	.116
0-9	59.03	1,642.00	1,148.00	.155	.109
Road Mix	3.80	.....	1,650.00	.....	.156
Total	437.65				

TABLE XXIV
Unit Costs of Re-oiling—1937

Specifi- cation	Miles Oiled	Cost per Mile		Cost per Square Yard	
		Rock Cost Included	Rock Cost Excluded	Rock Cost Included	Rock Cost Excluded
0-31	81.15	\$ 542.00	\$ 434.00	\$.051	\$.041
0-30	446.97	868.00	632.00	.082	.060
0-11	9.49	2,677.00	1,751.00	.253	.166
0-10 .....	.50	2,158.00	1,154.00	.204	.109
0-9	14.51	1,879.00	1,279.00	.178	.121
Road Mix .....	.46	.....	610.00	.....	.058
Total	553.08				

Minor Betterment

New construction, as the term indicates, consists of the initial or original construction of a highway to the existing state highway standards. Minor betterment work consists of subsequent improvements by state forces, consisting of grade stabilization of localized areas, widening and straightening the points which prove dangerous, additional drainage structures, non-skid treatment of oiled surfaces, the installation of guard fence and sight posts, the planting of trees and shrubs, widening and other improvements to bridges, the replacement of wood structures with a more permanent type, and the construction of sidewalks and pedestrian paths.

Expenditures for minor betterment work during the calendar years 1936 and 1937 are shown in the following table segregated by types of work according to the Department's cost accounting system.

TABLE XXV
Expenditures for Minor Betterments on Primary Highways
 Calendar Years 1936 and 1937

Item	Calendar Year 1936	Calendar Year 1937
<i>Surface</i>		
Concrete Pavement	\$ 19.52	\$
Asphalt Pavement	23,316.19	1,686.50
Bituminous Macadam	4,608.94	2,758.19
Oiled Macadam	16,389.11	54,591.72
Untreated Macadam	19,579.26	6,632.16
<i>Shoulders</i>		
Patching and Retreating	13,049.60	2,612.62
<i>Drainage</i>		
Ditches	3,254.65	638.93
Drains and Drainage Tunnels	19,822.08	15,825.55
<i>Structures</i>		
Box Culverts and Bridges under 20'	14,141.32	9,180.55
Bridges over 20' in Length	26,088.55	30,060.19
Guard Fences and Sight Posts	22,120.13	31,141.42
Pipe Culverts	15,461.10	11,232.49
Tunnels	360.30	.....
<i>Roadside</i>		
Removal Dangerous Trees, etc.	297.69	.....
Highway Beautification	113.93	316.72
Slide Removal and Cut Sloping	2,040.79	1,579.65
Embankment Replacement and Widening	21,978.65	16,747.69
Seeding and Planting for Slope Protection	197.66	1,604.55
<i>Traffic Service</i>		
Traffic Signals .....	.....	5,339.91
Snow Fence	3,312.19	3,366.44
Highway Illumination	331.20	3,619.62
<i>General Supervision</i>	7,133.63	6,515.25
Totals	\$213,616.49	\$205,450.15

Equipment

Since 1932, the Equipment Department has operated as a part of the Maintenance Department. Due to the fact that practically all state-owned and operated equipment is utilized by maintenance forces, operation in that manner has proved highly satisfactory.

Equipment repair shops located at Salem, La Grande, Klamath Falls, and Coquille repair and maintain all state-owned equipment. For the use of the equipment a rental charge, proportional to the original cost, is made against the work on which the equipment is used. The rental rates established are



SNOW REMOVED WITH V AND WING PLOW ON OREGON-WASHINGTON
HIGHWAY



5-TON TRUCK EQUIPPED WITH V PLOW AND SIDE WINGS

based on the Equipment Department's assuming the costs of all repairs and overhaul jobs, washing, greasing, and all tire expense. The inventory and shop accounts include a depreciation charge for each piece of equipment, which is applied each year during the life of the equipment, until the first cost plus repairs, etc., is amortized, when the rental rate is materially reduced.

Perpetual inventories are maintained of all state property such as small tools, furniture, engineering equipment, etc., and each employee is held responsible for the safekeeping of all equipment assigned him until he is relieved of that responsibility by the proper authority. Worn-out and obsolete equipment, materials, scrap metal, etc., are disposed of by a Survey Board, consisting of one State Highway Commissioner, the State Highway Engineer, and one staff officer who appraise the values and dispose of the materials or equipment on the basis of competitive bids.

REPORT OF BRIDGE DEPARTMENT

G. S. PAXSON, *Bridge Engineer*

No radical changes have been made in standards of bridge design during the past biennium. Designing practice, however, has been broadened to take advantage of high strength materials now economically available and also to take advantage of the improvements which have been made in the science of welding. High strength steels and welding have both served to provide required strengths with a smaller amount of material. The welding of connections where practicable and the substitution of plates for lattice bars have resulted in structures that are more rust resistant and consequently less costly to maintain.

Heavy rolled beams and H sections have been utilized in the construction of viaducts to span deep gulleys. The H sections were used in the construction of towers, while the beams were used as cantilevers and suspended spans supporting the deck. The building of through bridges, or bridges having girders or trusses above the deck, has been reduced as far as possible in favor of deck structures in order to improve sight distance and reduce the danger of cars running into the bridge members. New designs in steel handrails have reduced the dead load, improved the appearance of the structures, and increased the sight distance of the driver. Curved bottom chords for girders, improved pier designs, introduction of steel bents, and the use of perforated plates have improved the appearance of steel structures.

The construction of railroad grade separation structures continues to be of vital importance, and the use of ballasted decks, waterproofing of steelwork, and improvement in appearance are emphasized. In the design of subways, notable improvements have been made, especially in the method of providing for the uplift on the structure due to hydrostatic pressure, drainage, and the automatic pumping of the seepage and rain waste. Widths of roadways have been increased for subways and four-lane highways.

The use of safety devices and warning signals and the illumination of bridges and subways have become items of major importance and offer fertile fields for future investigation.

During the past biennium, ninety-nine structures, consisting of bridges, culverts, tunnel linings, and buildings, have been completed or placed under construction. The total value of these structures amounts to approximately \$4,125,700. In addition to the above, designs for ten bridges have been furnished to counties and one to the State Forestry Department. Included among the above structures are seventy-three bridges and culverts and fifteen grade separations which were constructed on state highways. Four of these bridges were constructed in cooperation with the Public Works Administration and one in cooperation with the Works Progress Administration. Ten buildings were constructed, four in cooperation with the Public Works Administration and three in cooperation with the Works Progress Administration. In addition to the above, one building was designed for the State Department of Parks.

This biennium saw the completion of the 1936 grade separation program, including the Wall Creek Undercrossing in Jackson County, the Union Avenue Overcrossing in Multnomah County, the Pendleton Overcrossing in Umatilla County, the Salem Undercrossing in Marion County, and the Oregon City Undercrossing in Clackamas County.

Grade separation structures built under the 1938-39 grade separation program include the Ontario Undercrossing in Malheur County, the Bunker Hill Overcrossing in Coos County, and the remodeling of the Union Avenue crossing of Sullivan's Gulch in Multnomah County. Construction has also started on the Main Street Undercrossing in Klamath Falls. In all, fifteen grade separation projects were under construction during this period.

A brief description of the most notable of the bridges is as follows.

Wall Creek Undercrossing: One of the most important projects completed during the past biennium was the Wall Creek Undercrossing section of the Pacific Highway. The work consisted of a subway structure to carry the highway under the Southern Pacific tracks about 12 miles south of Ashland and involved, in addition to the undercrossing structure, the construction of 0.41 mile of highway roadbed and concrete



BRIDGE OVER SHORT SAND BEACH CREEK ON OREGON COAST HIGHWAY,
TILLAMOOK COUNTY



BRIDGE OVER DEER CREEK ON NEWLY CONSTRUCTED PACIFIC
HIGHWAY IN ROSEBURG

paving. This project is one link in the modernization of the Pacific Highway through the Siskiyou Mountains.

The contract for the work was awarded to Berke Brothers, Inc., of Portland, Oregon, on November 30, 1935. The project was completed July 26, 1937, at a cost of \$180,000. This project was constructed in cooperation with the United States Bureau of Public Roads as a part of the 1936 Works Progress Grade Separation Program.

Union Avenue Viaduct: This project, which is a part of the new route for the Pacific Highway East through the city of Portland, consists of a concrete viaduct 1,639 feet in length and 881 linear feet of filled roadway approaches between concrete retaining walls. A roadway 48 feet in width with two 5-foot sidewalks is provided throughout the entire project. The project was constructed primarily to separate the grades of the highway and the main line of the Southern Pacific Company. It serves, however, to separate the grades of the highway from those of intersecting streets.

The contract was awarded to Hoffman Construction Company, Portland, Oregon, May 29, 1936. Work was completed July 30, 1937. The total cost of the project was \$459,165.19. The project was constructed in cooperation with the United States Bureau of Public Roads as a part of the 1936 Works Progress Grade Separation Program.

Bridge Over Necarney Creek: As a part of the new section of the Oregon Coast Highway between Cannon Beach and Nehalem Bay, a bridge was constructed over Necarney Creek. The bridge, which has a 26-foot roadway and two 3.5-foot sidewalks, is a steel tower type viaduct similar in design to the bridge over Quartz Creek described hereinafter. The towers are spaced uniformly at 92-foot centers with the top beams cantilevered 10 feet. The spans suspended from the cantilevered beams are 50 feet in length. The height of the roadway above the bed of the stream is 90 feet.

The contract for this project was awarded to E. F. & W. F. Philpott of Portland, Oregon, December 17, 1936, and work was completed September 30, 1937. The project was constructed

in cooperation with the United States Bureau of Public Roads as a part of the Regular Federal Aid Program.

Sullivan Gulch Grade Separation: This project which is a part of the improvement of the Pacific Highway East through Portland, eliminated a bad bottle-neck which was a serious menace to traffic. The old structure over the Union Pacific tracks had a roadway width of only 36 feet, whereas the highway at each end had a width of 56 feet. The work consisted of the reconstruction of the structure to provide a full 56-foot roadway.

The contract was awarded to Averill & Corbin of Portland, Oregon, on August 12, 1937, and work was completed June 26, 1938. The total cost of the project was \$69,500. It was constructed in cooperation with the United States Bureau of Public Roads as a part of the 1938 Federal Aid Grade Separation Program.

Ontario Undercrossing: At the point where the Old Oregon Trail crossed the main line of the Union Pacific in the town of Ontario, the frequent passage of trains and the switching of freight cars combined with the heavy vehicular traffic which this portion of the highway carries, served to create a hazardous crossing. In order to eliminate the delays and hazard, a subway structure has been constructed to carry the highway under the tracks. Because of excessive costs, due to property damage if the crossing had been constructed on the old alignment of the highway, the crossing was built one block north of the old crossing and the highway was relocated.

The work involved consisted of the construction of a steel girder span supported on concrete abutments, concrete retaining walls 400 feet in length on each side of the roadway, and .657 mile of roadway. The roadway, which is 50 feet in width, is flanked by a concrete sidewalk 5.5 feet wide on each side. The sidewalks, which are constructed above street level at the point where they pass under the tracks, are graded to street level at each end of the retaining wall sections and are separated from the roadway by handrails constructed on top of the retaining walls.

Due to the fact that the roadway was constructed below the level of the water table in the surrounding territory, the retaining wall sections and the abutments were waterproofed to prevent seepage from reaching the roadway. As an added precaution to protect the roadway against seepage and also to provide a means of taking care of such surface drainage, an automatic pump with a capacity of 500 gallons per minute was installed.

The contract for this work was awarded to C. J. Montag & Sons of Portland, Oregon, on August 12, 1937. Work was completed September 16, 1938. The total cost of the project was \$193,300. This project was constructed in cooperation with the United States Bureau of Public Roads as a part of the 1938 Federal Aid Grade Separation Program.

South Yamhill River Section: This project, which consisted of the realigning of 1.08 miles of the Pacific Highway West south of McMinnville in Yamhill County, involved, in addition to the road work, the construction of a bridge over South Yamhill River and a grade separation with the Southern Pacific tracks. Although it had been contemplated that realignment of this section of the highway would be required within a few years, it had not been programmed for this biennium. A truck, carrying a gas shovel, collided with the south portal of the steel span across the river on May 2, 1937, causing the structure to fail and fall in the river, and making it necessary to construct a new bridge immediately.

Because of the fact that the roadway on this section of the highway was narrow and crooked and as a matter of eventual economy, it was decided to reconstruct this section of the highway on new alignment. In addition to the bridge, which consists of three steel-deck girder spans with a total length of 293 feet and pile trestle approaches with a total length of 920 feet, the work involved the construction of a subway structure to carry the highway under the Southern Pacific tracks and 0.85 mile of highway roadbed and paving.

Bids were received on July 8, 1937, and the contract awarded to the Mountain States Construction Company of Eugene,

Oregon, who started work on the same date. The project was opened to traffic June 24, 1938.

The steel girders for the subway structure were purchased by the State and erected by the Southern Pacific Company. Foundation piling was furnished by the Highway Department from material salvaged from other jobs and driven by the Southern Pacific Company. The entire cost of the project was \$187,000.

The project was constructed in cooperation with the United States Bureau of Public Roads, partially as a Regular Federal Aid Project and partially as a 1938 Federal Aid Grade Separation Project.

Bridge Over Quartz Creek: The Wolf Creek Highway crosses Quartz Creek approximately $3\frac{1}{2}$ miles east of Elsie. At this point the creek is in a canyon, and in order to avoid heavy curvature and steep gradients, it was necessary to construct a bridge 835 feet in length, with the roadway 145 feet above the stream bed. Numerous studies of different types of structures resulted in the adoption of the steel tower viaduct type of construction as the most economical. The structure, which has a 26-foot roadway and two 3.5-foot sidewalks, consists of eight I-beam spans, varying in length from 62.5 feet to 105 feet, supported on one steel bent and seven steel towers. The I-beams over the towers were cantilevered from 12.5 to 15.0 feet from the tower columns, and the beams carrying the roadway were suspended therefrom by means of heavy steel links and chrome steel pins. The footings of all towers on the east side of the creek are supported by steel H piling. All other footings are supported on solid rock.

The contract on this structure was let to L. H. Hoffman of Portland, Oregon, on June 3, 1937. The project is completed with the exception of a small amount of painting which will be done when the weather becomes suitable in the spring. The work was performed in cooperation with the United States Bureau of Public Roads as a part of the regular Federal Aid Program. Estimated cost, \$172,000.

REPORT OF LEGAL AND RIGHT OF WAY DEPARTMENTS

J. M. DEVERS, *Attorney*

The work of the legal and right of way departments during the biennium has been a consolidation and continuation of the various activities outlined in the report for the previous biennium. Since the time of the last report the work of the Highway Commission has become more complex and more technical in that a large volume of work in improving existing streets and in establishing and constructing new routes through municipal corporations has been undertaken. In like degree the complexity and technicality of the work handled by the legal and right of way departments has increased, although there has been no increase in the department personnel.

Since the time of the making of the last report the State Highway Commission has taken over, to the practical exclusion of county or municipal cooperation, the acquisition of all rights of way and other lands for construction projects on state primary and secondary highways, as well as connecting routes through municipal corporations, and in addition thereto has assisted in or entirely handled the acquisition of lands on various county roads built from funds allocated by the Federal Government, the State Highway Commission later being reimbursed for the expenditures in such acquisitions.

By Chapter 462, Oregon Laws 1937, the legislature imposed upon the State Highway Commission liability for changes of grade, as the same had previously been established or maintained, in connection with construction work involving the alteration, repair, or improvement of city streets. No litigation has come to trial under this legislation, but some claims have been paid where there has been a clear and established change of grade to the damage of an abutting property. The legislation in question is somewhat vague in that it does not define just how much revision is necessary in order to constitute a change of grade necessitating the payment of damages, nor does the act define how far the liability extends on connecting streets where the grades of such streets may be changed at the points of intersection with the principal improvement.

In 1936, a declaratory judgment petition was filed in the Circuit Court for Multnomah County seeking a declaration of the authority of the State Highway Commission to lay out and establish highways, either primary or secondary, within the corporate limits of the City of Portland along a route or location where there existed no established street; to acquire by agreement, donation, or by the exercise of the power of eminent domain rights of way for such routes; to acquire rights of way for widening or otherwise improving existing streets where the same form a link in a state highway or connect two state highways; and in general to use and disburse state highway funds for the enumerated improvement and land acquisition purposes. The case was decided in favor of the Commission on all points in the Circuit Court and an appeal was taken by one of the named defendants. On this appeal the Supreme Court of the State affirmed in its entirety the decision of the Circuit Court, and the right of the State Highway Commission to construct and improve either entirely new routes or existing city streets and to acquire the lands necessary therefor appears now to be clearly established.

In connection with the improvement of the Upper Columbia River Highway between Portland and Cascade Locks, the revised location lies along the edge of the Columbia River and in many instances the construction operations will extend out into the river below ordinary high-water mark. So that the property to be used for highway purposes might be under the jurisdiction of the State Highway Commission, a conveyance was secured from the State Land Board conveying the lands between ordinary high-water mark and low-water mark, to which title still was vested in the State of Oregon under the jurisdiction of the State Land Board. In connection with the proposed construction, the question arose as to the liability of the State Highway Commission in damages to upland owners where highway construction upon such lands below low-water mark may deprive such owners of the ordinary and convenient access to the navigable waters of the river. In order to secure a court decision upon this matter, a declaratory judgment petition was filed in the Circuit Court for the County of Multnomah, in which all owners so affected by the proposed

construction were named as parties defendant. So far, sufficient answers to bring the matter to trial have not been filed and, owing to the great number of right of way purchases and settlements which have been made with the upland owners, it is possible that the entire matter may be concluded without a final trial of the proceeding.

The proposed Water Street improvement in Oregon City involves, in addition to the acquisition of lands in platted blocks between Water Street and the river, the construction of the improvement across various street ends. There long has existed a controversy as to whether or not the title to such street ends ever was vested in the city, or has been lost by the city if it ever had so vested. In order to secure a decision on the matter, an action was brought in the Circuit Court for the County of Clackamas by the purported owners seeking to quiet their title thereto, in which proceeding the City of Oregon City was named as sole defendant. Although the State Highway Commission was not named as a party defendant, its legal staff assisted in the preparation and trial of the case. The decision in the Circuit Court was in favor of the plaintiff and held that Oregon City as a municipal corporation had no right, title, or interest in or to the said street ends or any part thereof, and title was quieted in the plaintiff as against any and every claim of the defendant. The case is now on appeal in the Supreme Court.

Since the creation of the State Highway Commission by Chapter 237, Oregon Laws, 1917, each successive legislature has made amendments to prior legislation and has enacted new legislation affecting the powers, duties, and responsibilities of the State Highway Commission until at the present time there exists a vast body of independent statutes—in some respects vague and uncertain; in some respects a duplication; and in some respects conflicting. In order to remedy this situation and to bring the existing legislation up to date in a clear, comprehensive, unified code, the department has given considerable study to the rearrangement and amendment of existing statutes and to new legislation on questions not now covered. It is proposed to submit the matter to the next legislature.

At the beginning of the biennium, there were 31 condemnation cases and nine cases of a miscellaneous nature pending. During the two-year period, 63 condemnation cases involving right of way, three condemnation cases involving parks, and four condemnation cases involving gravel pits and quarries were filed, in addition to 20 other miscellaneous cases in which the department was either plaintiff or defendant, making a total of 130 in all. Of these, 15 condemnation cases have been tried and have gone to final judgment and 39 condemnation cases have been settled by negotiation and agreement and the complaints dismissed. Of the miscellaneous cases, 12 have either been tried or have been dismissed, making a total of 66 cases disposed of and leaving 64 pending at the time of this report.

In addition to the other work, in excess of 90 miscellaneous agreements have been prepared by the legal department and approximately 204 contracts have been examined and approved. Ten petitions have been filed with the Public Utilities Commissioner by the department and 13 other petitions involving railroad crossing matters have been filed by other parties. Hearings on these matters have been held before the Public Utilities Commissioner and orders entered. Four petitions were filed and service made upon the department in grade crossing matters involving highways not under the jurisdiction of the State Highway Commission, and in these instances answers have been filed denying any interest on the part of the Commission.

In the two-year period, 2,377 real property transactions have been closed, consisting of 1,913 for right of way, 127 for quarry sites and gravel pits, 212 for stock pile sites, 37 for parks, and 88 for miscellaneous sites. The actual expenditures during the period, except for the 37 park sites which are covered in a separate classification in this report, for these acquisitions amounted to \$1,214,255.73. Many of the deals actually closed were transactions which had been begun and which had been approved by the Commission during the previous biennium. The making and closing of each of these transactions has involved not only the taking of options but also the preparation of deeds or leases and, in many instances, the preparation of

mortgage releases, judgment releases, petitions and orders in probate matters, and so forth.

During the biennium the Commission passed upon and approved a total of 1,914 individual settlements, consisting of 1,438 for right of way, 152 for quarries and gravel pits, 213 for stock pile sites, 36 for parks, and 75 for miscellaneous sites. Many of these settlements are included in the 2,377 stated above as having been actually closed.

From July 1, 1938, to and including the November 17th meeting of the State Highway Commission, the Commission has approved the acquisition of an additional 246 properties, consisting of 171 for right of way, 32 for quarry sites or gravel pits, 24 for stock pile sites, 14 for parks, and five for miscellaneous sites. It is estimated that the expenditures for the last half of the calendar year, exclusive of park purchases, will amount to approximately \$350,000.

Both the legal and right of way departments are under the general supervision of J. M. Devers, Attorney for the Commission, with J. W. DeSouza, Assistant Attorney, in direct supervision of the right of way activities. The title examination work of the department is handled by I. M. Schannep, who, in addition to this work, handles all attachment and garnishment proceedings affecting employees of the department and all automobile accident reports covering State Highway Commission equipment. In addition, the force consists of a Real Property Office Assistant in charge of all office records affecting land acquisitions, and seven Right of Way Agents, who handle actual field negotiations and contacts in land purchase work. These employees are supplemented by the necessary office and stenographic help.

REPORT OF DEPARTMENT OF TRAFFIC ENGINEERING AND STATE-WIDE HIGHWAY PLANNING SURVEY

JOHN BEAKEY, *Traffic Engineer*

The duties of the Traffic Engineering Department relate to those problems having to do with highway operation and to some extent with highway design. Stated briefly, the department is concerned with matters of safety and the facilitating of traffic movement.

In addition to what may be termed its regular duties, this department has handled the State-wide Planning Survey, made in cooperation with the U. S. Bureau of Public Roads. This Planning Survey, begun in the spring of 1936, was reported upon in the last preceding biennial report of the Commission. The work has now progressed to the point where it is practically completed with the exception of some small amount of office work and the publication of some of the reports.

Originally, it was contemplated that the Survey would consist of certain distinct but interrelated investigations; namely, a Rural Traffic Survey, a Rural Road Inventory, a Fiscal Survey, a Motor Vehicle Allocation Survey, a Road Use Survey, a Road Life Survey, and the preparation of certain maps from data obtained by means of the Inventory and Traffic studies. As the work progressed, it was decided to increase the scope of the original program and to make two additional surveys: An Inventory of City Streets, and a City Traffic Survey. The latter two projects, and much of the addenda to the others, was inaugurated primarily for the purpose of obtaining data which might be used to determine a fair and equitable allocation of road-user funds between the state, the counties and the municipalities.

The Rural Traffic Survey has furnished more detailed data concerning the movement and type of traffic in the state than have been available to the Highway Department hitherto. Traffic density has been obtained on all roads in the state, a segregation being made as to types of vehicles. Field parties, operating throughout the state on predetermined schedules, have obtained the following information:

1. Average daily density of passenger-car, truck and bus traffic.
2. Maximum daily density of passenger-car, truck and bus traffic.
3. Hourly, daily, and seasonal fluctuation of passenger-car, truck and bus traffic.
4. Classification of truck and bus traffic by weight.
5. Wheel loads, gross loads and dimensions of trucks and busses.
6. Origin and destination of traffic by locality.
7. Character, volume and origin and destination of all commodities moved over the highways.

The findings of the Rural Traffic Survey are published as Technical Reports Nos. 38-5, 38-5A, and 38-5B, the latter two containing addenda consisting of traffic density tables, and truck and bus tables, respectively. Bound copies of the Traffic Station maps have been prepared for convenience in determining the locations of the counting stations. It has not been considered economical to prepare traffic-flow maps for the separate counties, but a large state traffic-flow map has been made on a scale of one-eighth inch to one mile showing both passenger-car and commercial-vehicle traffic density.

The Traffic Survey was directed by B. Glenn, Traffic Survey Manager, until September 15, 1937, and since that time by Don Manning, who had previously acted as assistant.

The Rural Inventory Survey included a complete physical inventory of some 49,000 miles of road, including primary and secondary state highways, county roads, forest development roads, etc. The data obtained include mileages of the various roads, locations of structures and other features, widths of roadways and surfacings, types of surfacings, types of bridges and other structures, grades, curvature, and locations of adjacent buildings and other culture. Particular attention was given to railroad grade crossings, care being taken to record



PERMANENT PIT SCALE WEIGHING STATION



TYPICAL OPERATIONS AT WEIGHING STATION

sight distances, protective devices and other particulars which might aid in a systematic and intelligent selection of the most dangerous of such crossings for elimination. Sight-limiting features were obtained on the primary system. These data may, and, in fact, have already been used as a means of selecting roads for improvement.

A more detailed discussion of the information obtained from this survey and the procedure followed in obtaining the data has been published in Technical Reports Nos. 38-2 and 38-2A.

As a phase of the Rural Road Inventory, there have been published several series of county maps and also a state map. The county maps, on a scale of one inch to one mile, include general highway and transportation maps, postal-route maps and school-bus-route maps. It is believed that they are the most complete county maps ever to have been published for Oregon. The general maps were used as a basis for the construction of the traffic-station maps. In addition to the county maps and the state traffic-flow map mentioned previously a state map has been made on a scale of one-eighth inch to one mile.

The Rural Road Inventory was made under the direction of Paul Van Scoy, Inventory Manager, until July 1, 1938, and since that time, by James J. Walton, who had previously served as assistant.

One of the primary purposes of the Fiscal Survey was the study of highway taxation and finance. Oregon's highway tax structure was treated in detail in Technical Bulletin No. 10 and many of the data pertinent to the highway finance of minor governmental units in Oregon used in Bulletin No. 10 were obtained from the Fiscal Survey.

The Fiscal Survey was started in 1937, which permitted the use of the 1936 fiscal year as a basis of study. The objectives outlined by the Bureau of Public Roads included the study of all public finance in Oregon. It was therefore necessary to tabulate and summarize all receipts, disbursements, and debt of the State of Oregon, its various political subdivisions, and certain federal agencies. The analysis required visiting all cities above 1,000 population and 25 per cent of those below

1,000 population, including all county seats. Also, a large percentage of the offices of special districts were contacted directly. Data on those units whose records were not investigated directly were obtained from their reports to the Secretary of State. The federal expenditures considered, other than WPA expenditures which were included in total, were those on Oregon highways. Thus, all ascertainable federal highway expenditures were tabulated and summarized along with the highway expenditures of all Oregon governmental units.

The tabulated data obtained by the Fiscal Survey, along with discussions of modifying conditions, are presented in Technical Report No. 38-4. Included in the tables in that report are segregations of all governmental expenditures and debt according to four basic purposes: Highways, education, public welfare and services, and general government. A detailed analysis of highway receipts and expenditures is also developed. Segregations of highway expenditures, debt, and debt service are made according to administrative highway systems. They are also segregated and classified into the urban (U-1, U-2, and U-3) and rural (R-1, R-2, and R-3) arterial, general use, and special use highway systems.

The Fiscal Survey has been handled by Dennis W. Keef, Assistant Financial Survey Manager, under the direction of Paul Van Scoy, Assistant State Manager.

The purposes of the Motor Vehicle Allocation and Road Use Surveys were to obtain information relative to motor vehicles registered and in use in the state of Oregon during 1936. Included were the determination of the correct situs of vehicle ownership by counties and by the various urban and rural areas in the state; the determination of the motor vehicle imposts; i. e., registration fees, gasoline taxes, transportation fees, and miscellaneous fees, paid by vehicle owners within each area; the determination of the proportional use of each of the various highway and street systems of the state; the determination of the source or origin of such road use in relation to the several classes of governmental units; and conversely, the determination of the extent that each highway or street system was used by the residents of each of such governmental units.

Data to fulfill the above purposes were obtained both by questionnaires and personal interviews. Average annual travel and gasoline consumption were developed for each type of vehicle in order that the fuel taxes paid could be correctly proportioned. Vehicular travel data by highway and street systems were compiled to show the use that is made of the respective systems. In addition, numerous tables are available showing the operating characteristics of the various vehicular types by registered light and gross weights. In other words, a cross-sectional picture has been provided to indicate the location and use of motor vehicles in Oregon and the taxes paid for their operation.

A more detailed explanation of these two surveys may be found in Technical Report No. 38-3. The Motor Vehicle Allocation and Road Use Surveys were handled by Fred J. Myers, Assistant Financial Survey Manager, under the direction of Paul Van Scoy, Assistant State Manager.

The City Street Inventory was undertaken primarily for the purpose of obtaining certain factual data necessary for an intelligent analysis of Oregon's tax structure. Data obtained included mileages of city streets, street widths, surface types, condition of surfaces, estimated costs to place the city streets in satisfactory riding condition, and similar information. As a phase of this survey, the city streets were segregated into three systems known as the "arterial", "general use", and "special use" systems, and designated respectively as the U-1, U-2, and U-3 street systems.

Street surface maps for each incorporated city were constructed on a scale of 200 feet to one inch. The results of this survey are published in Technical Reports Nos. 38-1 and 38-1A. The work was directed by Paul Van Scoy, Inventory Manager, assisted by James J. Walton.

The City Traffic Surveys consisted of traffic-density studies in some 126 incorporated towns, including all of the larger ones. In those cities where it was believed the question might soon arise, the counts were made in such manner as to determine the necessity for traffic signals. The city traffic surveys were directed by B. Glenn, assisted by Don Manning.

The interests of the U. S. Bureau of Public Roads, in regard to the Planning Survey, have been in charge of Harry E. Mitchell, Bureau Manager.

Among the other duties of the Traffic Engineering Department are the design of traffic signs, signals and markings and the preparation of specifications for such devices; the investigation of hazardous conditions and the initiation of steps for their remedy or control; the supervision of route marking; the analysis of accident statistics; and kindred activities.

The State Highway Commission is required by law to approve traffic signal installations within municipalities. In conformity with this law, surveys have been made in a number of cities and recommendations made for signal installations in several. Signal systems have been installed in Salem and Eugene, and isolated installations have been made at a number of other places, both rural and urban. Conduit has been installed on both Sandy Boulevard and Interstate Avenue in Portland, recently improved by the State Highway Department, and it is planned to install flexible progressive signal systems on these two streets.

REPORT OF TRAVEL AND INFORMATION BUREAU

HAROLD B. SAY, *Travel Bureau Manager*

Increased non-resident motor travel on Oregon's highways means added revenue to help in the construction and maintenance of the state's road system. It was on this premise that the Highway Commission established the Travel and Information division of the Department late in 1935 to publicize to the world the scenic and recreational attractions of the State with the objective of increasing traffic to and over the highways of Oregon.

Toward this end, approximately \$100,000 was spent in each of the years 1937 and 1938, primarily in the form of advertising in magazines and newspapers of the nation and in comprehensive, attractively illustrated booklets to carry the story of the State's outstanding and varied attractions.

Indicative of the effectiveness of this undertaking is the fact that Oregon's motor travel has increased beyond the average of sections of the West which have for many years conducted travel promotion operations.

Oregon's 1937 non-resident motor travel—an all time record—was nearly 55 per cent over that of 1935. In that year non-resident motorists visiting the state are estimated to have spent approximately \$22,000,000 while in Oregon. Of this amount the Highway Department through its general traffic survey has ascertained that approximately \$1,300,000 was in the form of gasoline tax.

Based on data available at the time this report was assembled (November 1938), non-resident traffic over Oregon's highways dropped approximately nine per cent in 1938 under the total for 1937. Non-resident traffic the nation over is estimated to have dropped nearly 20 per cent due to general economic conditions. Hence, Oregon fared relatively much better than many sections of the nation. A survey carried out on the Columbia River Highway during the peak of the tourist season in 1938 indicated an almost complete absence of "poverty" or so called "tin can" tourist traffic during the year. Assuming

that expenditures per car were about the same as in 1937, non-resident traffic meant nearly \$20,000,000 in new revenue for Oregon as a whole in 1938. Of this amount about \$1,170,000 accrued to the state in the form of gasoline tax.

The general expenditures of these tourists are distributed through every business channel. Based on 1937 non-resident registrations of 155,161 cars and allowing for a percentage failing to register (and estimating three persons to a car), more than 600,000 persons came into the State by private automobile alone in that year. A survey carried out late that year showed the average stay within the State to be 9.5 days. The business of housing, feeding and meeting the multiple wants of this tremendous number is a huge one, indeed—and a cash one.

To give as briefly as possible some of the operations of the Travel and Information Department, the following facts are presented:

During 1937 and 1938, the department printed and distributed more than 524,000 maps and booklets setting forth the attractions of the State.

During this same two-year period, it received more than 107,000 inquiries from persons throughout the United States and Canada for detailed information on attractions of the State and for data on highways leading to Oregon. Also, it received kindred inquiries from persons from more than 40 foreign countries.

During the two-year period, about 3,500 travel directing agencies throughout the United States and Canada have been supplied with folders and maps on the State.

In addition to the distribution of booklets and maps prepared by the department itself, approximately 200,000 pieces published by various regional associations, chambers of commerce, resorts, the National Park Service, U. S. Forestry Service and other agencies assembling information on Oregon have been distributed by the department.

Exhibits designed to induce vacationists and others to "Drive Oregon Highways" have been arranged at some of the nation's

outstanding travel shows during the past two years. Typical of some of these are: annual travel show of the Automobile Club of Southern California, Los Angeles; The Chicago Daily News International Travel Exposition, Chicago; the Philadelphia Record Vacation Exposition, Philadelphia.

Stories and photographs conducive to increasing interest in traveling Oregon highways were supplied to newspapers and magazines throughout the country, particularly to those in western sections of the United States from which the largest percentage of Oregon's non-resident travel is coming at the present time. On a basis of commercial charges, the space devoted to Oregon in 1937 and 1938 by these publications using the material supplied by the department would have cost not less than \$250,000 according to the department director's estimate. It was accepted and published without cost to the State.

Many advertisers do not have opportunity to check on the apparent effectiveness of their advertising. The Highway Department in July, 1938, had a very definite opportunity. Because of repair work at the Mosier tunnel on the Columbia River highway (U. S. 30) it was necessary to hold traffic, allowing it through only on even hours during the day. The department placed a contact man at the west portal of the tunnel to question non-resident tourists at length. It was found that over half of all incoming visitors had read the department's messages on Oregon in national magazines; that nearly half had read of Oregon's attractions in newspaper advertising; also that nearly half of those coming wrote for or obtained booklets and maps on Oregon before starting for this state.

In that automobiles from 38 states and Canada were included in the Mosier tunnel survey, the results showed conclusively that the story of Oregon's attractions being presented year by year through the Highway Department's advertising and publicity is being read and is helping to push Oregon's tourist travel with its beneficial returns not only to the Highway Department's funds but to all Oregon much higher than it otherwise would be.

REPORT OF STATE PARKS DEPARTMENT

SAMUEL H. BOARDMAN, *State Parks Superintendent*

The biennial period, July 1, 1936, to June 30, 1938, marked a great advancement in the State Park program. New, highly desirable acquisitions have been made, and development work has been accelerated to keep pace with the insistent, ever growing demand for more and better park facilities by those who visit Oregon's widely popular recreational areas.

During this period, seven areas aggregating 131 acres have been donated to the State by public spirited citizens. A total of 2,026 acres, embraced in 21 new areas, have been acquired by purchase at a cost of \$101,441.84. These new acquisitions have increased the State-owned areas to 152, with a total of 21,120 acres, classified as follows:

<i>Classification</i>	<i>Number</i>	<i>Acres</i>
Parks	83	15,330
Timber preservations and wayside strips ..	24	3,571
Recreational areas (leased from U. S.)	10	1,538
Monument sites, parking spaces, view points and others	25	121
Water supply areas	6	209
Parkways	4	351
Totals	152	21,120

Since the last report, there has been a continuation of the technical assistance, labor and facilities tendered by the Federal Government, through its Civilian Conservation Corps, which has still further enhanced the development of our State parks. Although the number of CCC camps available for State park work has been reduced, those camps are still a large factor in State park development. These agencies have carried on various improvements of permanent character, to the extent of

many thousands of dollars, which will remain possessions of the State for the use and enjoyment of the people and their guests. With the aid of two summer camps and five winter camps, the work has been continued or extended in eight State parks. A marked improvement is noted in the technique and type of work being carried on and our recreational areas are being greatly enriched by these agencies.

As a future adjunct to the Silver Creek Falls State Park, the National Park Service is carrying on the only Recreational Demonstration Project in the Northwest. Some 4,000 acres of land have been acquired. Extensive and elaborate improvements have been made and are continuing. When this project is fully developed and the work under the direction of the Federal authorities is concluded, it has been planned that the land and all the extensive improvements will be turned over to the State Parks Commission for future care and management.

The tourist travel stimulation campaign carried on by the Highway Department has reflected itself in increased usage of



CARETAKER'S HOUSE IN JESSIE M. HONEYMAN PARK BUILT BY
CCC LABOR

the improved State parks by out-of-state visitors, as well as local people. During the biennium, the total number of cars reported by the caretakers of the various parks totaled 707,000, with a very noticeable weekly increase as the biennium drew to a close. Of the individual parks, Silver Creek Falls reported the highest attendance. As a group, the coastal parks attract the most visitors, with a notable increase reported from the more southerly coast parks, all indicating that motorists find the park improvements and facilities a convenience in their travels.

State expenditures made in connection with State parks are as follows:

<i>Class of Expenditure</i>	<i>July 1, 1936 to June 30, 1938</i>	<i>Total Expenditures to Date</i>
Purchase of real property	\$ 69,945.66	\$325,971.25
Improvements	16,183.55	164,191.62
Operation and maintenance	46,570.57	108,256.96
Totals	\$132,699.78	\$598,419.83

REPORT OF MATERIALS DEPARTMENT

N. M. FINKBINER, *Engineer of Materials*

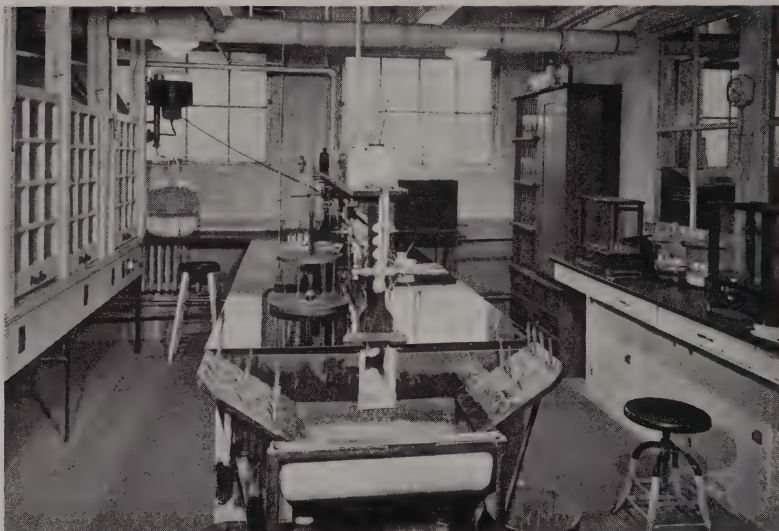
The duties of the Materials Department comprise the testing and inspecting of materials and mixtures used in Oregon's highways and bridges, the checking of materials and mixtures in the field, and the carrying-on of laboratory research work.

The laboratories, employing 15 persons, consist of the chemical, oil and asphalt, granulometric, cement, and physical units. They are under the supervision of G. W. Harra, Assistant Engineer of Materials, with Chas. F. Hagemann, Office Manager.

During the biennium, 24,182 samples were tested in the laboratories. These samples consisted of brick, cement, concrete cylinders, concrete culvert pipe and tile, diatomaceous silica, earth and clay binders, expansion joint materials, ferrous metals and alloys, galvanized iron pipe—plain and dipped, gasoline, gravels, guard-rail cable, lubricating oils, paints and paint materials, piling, porous drain tile, reflector buttons, road mixtures, road oils and asphalts, rock, sand, subgrade soils, surface cuts and water.

Before materials may be used in the field, they must pass rigid tests to determine whether they meet the specifications under which they are furnished. On all concrete paving work, four cylinders are cast from each 1,000 square yards of pavement placed. These cylinders are cured in the same manner as the pavement itself and are shipped to the laboratory in time to be broken at the required ages, usually 7, 14, 21, and 28 days. It is specified that the average test results for concrete pavement show a minimum strength at the end of the 28-day period of 3300 pounds per square inch (compressive strength). In bridge construction work, four cylinders are cast from each day's pour and are broken in the laboratory after 7, 28, and 60 days. The results of the tests are used in the adjusting or "setting" of the concrete mixes to produce concrete of the required strength.

The various classes of bituminous mixtures are sampled daily. Samples are secured at the paving plant if from a plant-mix job and from the road when a mixed-in-place project is under construction. Samples are also cut from the newly



CHEMICAL SECTION OF STATE HIGHWAY LABORATORY AT SALEM



OIL AND ASPHALT SECTION OF STATE HIGHWAY LABORATORY

completed bituminous roadway and tested to see that the necessary compaction has been obtained through proper rolling. Bituminous mixtures, both for construction and maintenance, are designed by the laboratory.

Since the Materials Department is responsible for the mixtures laid in the field during the construction season, approximately 15 checkers and inspectors are employed to see that there is no deviation from the various mixes as set by the laboratory. At each concrete batcher is a checker to see that the proper weight of each ingredient enters the mix. At plants where the cement is weighed some distance from the aggregate batcher, it is necessary to place an additional checker. Moisture tests are made on the fine aggregate four times a day, or oftener if necessary, and the results sent to the road inspector for his information.

At bituminous paving plants, it is necessary to make periodic granulometric analyses of each bin to the end that the desired mix may be held by the plant inspector without deviation. A weigh checker is stationed on the platform of the plant and issues a ticket for the weight of mixture in each truck.

The Materials Department has an inspector and a checker on each mixed-in-place job. The checker samples and makes sieve analyses of the windrow at regular intervals and gives the results of these tests to the inspector who figures the "oil shot" from a formula designed by the laboratory for that particular job. The inspector watches the mixing operations and permits the "lay out" when the material is sufficiently mixed with the road binder.

The research division, recently organized under the direct supervision of Oscar A. White, Research Technician, has greatly improved the method for testing reflector buttons. At the present time representative concrete aggregates from a variety of sources throughout the state are being compared as to their resistance to freezing and thawing. Some work is also being done on the hardening of asphalts in pavements; on the coefficient of expansion of the components of concrete; and on the expansion and contraction of concrete due to wetting and drying. Other important investigations are projected and will be started in the near future.

MISCELLANEOUS ACTIVITIES

Research

The rapidity with which construction and design practices in highway engineering are developing, and the innovations being wrought in the automotive industry render it necessary for a modern highway department to maintain at all times a sizable research staff. Considerable work of this character has been accomplished during the last few years. The major research projects completed during the current biennium are represented by the following publications:

Technical Bulletin

<i>No.</i>	<i>Title</i>	<i>Authors</i>
5	The Effect of Highway Design on Vehicle Speed and Fuel Consumption	John Beakey
6	The Effect of Heavy Motor Transport on Highway Bridge Stresses	C. B. McCullough G. S. Paxson
7	The Economics of Highway Planning	C. B. McCullough John Beakey
8	Determination of Highway System Solvencies	C. B. McCullough
9	The Merit System for Engineering Personnel	R. H. Baldock & C. B. McCullough
10	An Analysis of the Highway Tax Structure in Oregon	C. B. McCullough, John Beakey, & Paul Van Scoy
11	Economic Analysis of Short-Span Suspension Bridges for Modern Highway Loadings	C. B. McCullough, G. S. Paxson, & D. R. Smith

In addition to the above completed projects, a number of projects are under way at the present time. Principal among these are:

1. An Investigation of the Effect of Highway Surface Types on Motor Transport Costs.
2. An Investigation of the Effect of Stiffening Truss Design on the Deflection of Suspension Bridges.

3. The Effect of Highway Alignment on Highway Transport Costs.
4. The Effect of Traffic Flow on Highway Transport Costs.
5. An Investigation of the Weathering of Structural Concrete.
6. An Investigation of the Light Diffusion Characteristics of Various Types of Pavement Surfaces.
7. An Investigation of the Behavior of Concrete Pavements with Various Types and Spacing of Expansion Joints.
8. A Study of Acceleration and Deceleration of Passenger Cars.
9. Skid Resistance Measurements on Various Road Surface Types.
10. The Determination of Causes of Hardening of Asphalt in Asphaltic Concrete.
11. Determination of the Coefficient of Expansion of Components of Portland Cement Concrete.
12. Measurement of Expansion and Contraction of Concrete Due to Wetting and Drying. Measurement of Internal Stress of Concrete by Temperature Change.

In addition to the investigational work hereinabove listed, a cooperative research in reference to methods of tests for sand aggregate was inaugurated during the current biennium between the State Highway Department and the Oregon State College Engineering Experiment Station. The results of this investigation were published as Bulletin Series, No. 8 of the Engineering Experiment Station, Oregon State College in September, 1937, under the title "An Investigation of Some Oregon Sands with a Statistical Study of the Predictive Values of Tests", by C. E. Thomas and S. H. Graf.

A complete list of the technical bulletins published by this department to date, follows:

<i>Technical Bulletin No.</i>	<i>Title</i>	<i>Authors</i>
1	Loading Tests on a New Composite Type Short-Span Highway Bridge, Combining Concrete and Timber in Flexure	R. H. Baldock C. B. McCullough
2	Application of Freyssinet Method of Concrete Arch Construction to the Rogue River Bridge in Oregon.....	A. L. Gemeny* C. B. McCullough
3	Loading Tests on Steel Deck Plate Girder Bridge with Integral Concrete Floor	G. S. Paxson
4	Design of Waterway Areas for Bridges and Culverts	C. B. McCullough
5	The Effect of Highway Design on Vehicle Speed and Fuel Consumption	John Beakey
6	The Effect of Heavy Motor Transport on Highway Bridge Stresses	C. B. McCullough G. S. Paxson
7	The Economics of Highway Planning	C. B. McCullough John Beakey
8	Determination of Highway System Solvencies	C. B. McCullough
9	The Merit System for Engineering Personnel	R. H. Baldock C. B. McCullough
10	An Analysis of the Highway Tax Structure in Oregon	C. B. McCullough John Beakey Paul Van Scoy
11	An Economic Analysis of Short-span Suspension Bridges for Modern Highway Loadings	C. B. McCullough G. S. Paxson D. R. Smith

* Senior Structural Engineer, Division of Tests, Bureau of Public Roads, Washington, D. C.

Selection and Training of Departmental Personnel

During the current biennium, the State Highway Department has inaugurated a merit system for the selection, training and maintenance of its personnel. This procedure employs a system of seven rating schedules as follows:

Schedule No. 1 General characteristics.

Schedule No. 2 Specialized training.

Schedule No. 2a Undergraduate record (applicable to student applicants only).

Schedule No. 3 Service bonus ratings.

Schedule No. 4 Credits for service-training advancement.

Schedule No. 5 Credits for postgraduate educational training.

Schedule No. 6 Credits for executive and administrative capabilities.

The purpose which it is sought to accomplish under these schedules is completely described in Technical Bulletin No. 9, entitled "The Merit Rating System for Engineering Personnel", issued in February, 1938, by this department, from which the following is quoted:

"In summary, this procedure is designed to accomplish the following:

— "(a) To establish a specification or basis for the selection of all new employees based solely upon merit.

"(b) To eliminate pressure, prejudice or the personal equation by the organization of a permanent personnel board whose findings, in general, are based solely upon the facts submitted with each application, and whose deliberations are unhampered by any personal contact with each or any applicant, or, in fact, even a knowledge of his name.

"(c) To recognize (by means of Schedule 2a) scholastic achievement and extracurricular technical work on the part of the members of those engineering student bodies who constitute in large measure the principal source centers of technical personnel, and thus to stimulate training in advance of employment.

"(d) To recognize longevity of service, service-training advancement, and postgraduate education through the inauguration of Schedules 3, 4, and 5.

"(e) To recognize executive and administrative ability through the inauguration of Schedule 6, applicable only to the higher brackets.

"(f) To encourage and reward the cooperative efforts of all executives in the in-service training of their subordinates through the employment of a special rating item in Schedule 6.

"(g) To vitalize the above principles by basing all selection, promotion and dismissal on a merit-rating basis.

"The maximum attainable merit rating is 200 points under Schedule 1; 200 points under Schedule 2; 50 points (for the engineer group) under Schedule 3; 100 points under Schedule 4; and 100 points under Schedule 5. It is possible, therefore, for engineers in the nonexecutive group to build up a maximum rating of 650 points. This would require that the engineer-employee have a perfect Schedule 1 rating; that he have a degree course in engineering; that he have at least ten years' experience in the grade of employment for which he is being rated, or a higher one; that he earn the 100 additional credit points under Schedule 4; and, finally, that he satisfactorily complete three years of post-graduate study in some particular specialization. It is obvious that there will be very few in the engineer group who will even approach this maximum although it is possible under the system.

"In addition to the above, the engineer, if he be a line officer or subordinate executive, can increase his rating another 350 points (under Schedule 6) through the development of the necessary executive and/or administrative qualities, thus raising the possible total to 1,000 points.

"The foregoing discussion has been directed particularly to the engineer group. The merit-rating system, however, has been extended to all other lines of specialized endeavor comprehended within the scope of the highway department's activities, the relative weight given to education vs. experience being varied with the various positions to create as nearly as possible a systematic balance.

"Much remains to be done in the way of further development, and many of the schedules will doubtless be found to need modification from time to time. It is felt, however, that the system as a whole is well balanced and susceptible of successful operation throughout the years."

Eye-sight Tests for Employees

Early in 1938 an incident occurred which indicated that two employees of the Maintenance Department had defective eyesight. Because of this incident it was deemed advisable to examine the eyesight of all employees of the State Highway

Department who have occasion to operate state-owned motor vehicle equipment.

At the request of the department a board consisting of three oculists and two optometrists set up a standard series of tests and a competent practitioner was commissioned to examine the eyesight of all employees driving state equipment.

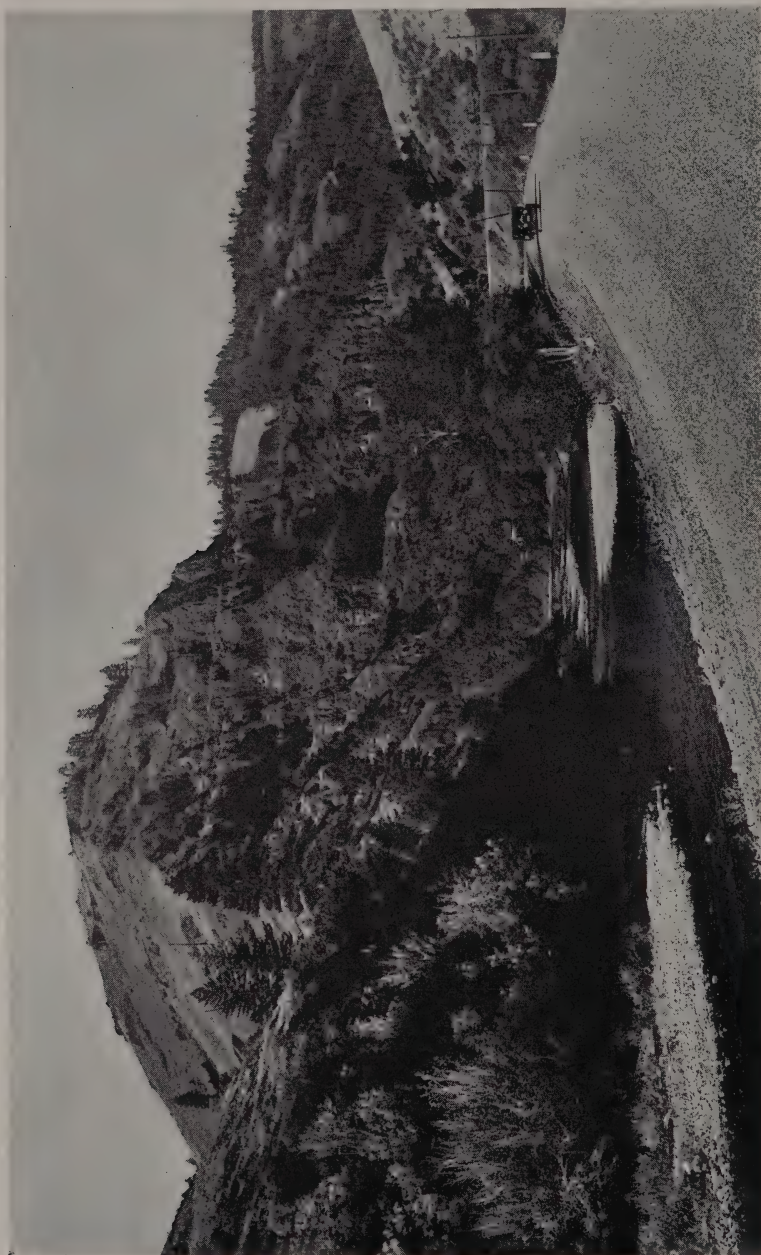
At the time this is written most of such employees have been examined. Several have been found to have defective vision and most of these have been corrected by being fitted with new glasses. In those cases where a correction cannot be made, the employees have been transferred to positions where the driving of motor vehicles is not a requisite.

It is believed that this activity will result in the elimination of many accidents and possibly the saving of several lives. The work has been handled by L. Robert Burdette, Examiner, under the direction of John Beakey, Traffic Engineer.

Revision of Accounting Procedure

With the view of placing the Department's accounting procedure on the most efficient basis possible and of taking advantage of the most recent developments in business management, the Commission has engaged a firm of accounting experts to make an exhaustive survey of the accounting methods and the accounting needs of the Department and to re-systematize the accounting procedure to such extent as may be found to be advisable. As this report goes to press, the survey work is completed and the revision of system is well along toward completion. Parts of the revised system will go into operation on January 1st, and all changes will be in effect by March, 1939.

The revised system is expected to very considerably expedite the payment of claims and the compiling of cost reports; to give more positive control of the materials, supplies and equipment handled through the Department's warehouses; to eliminate some duplication in record keeping work; and to provide a greater centralization of accounting operations. It will provide, also, a system of general ledgers and control accounts that have not heretofore been a part of accounting set-up.



OLD OREGON TRAIL NORTH OF LA GRANDE

Section Three

FINANCIAL STATEMENTS

Covering the Fiscal Period
July 1, 1936, to June 30, 1938

AND

STATISTICAL INFORMATION

PERTAINING TO

State Highways and County Roads

IN THE

STATE OF OREGON

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TABLE No. 1
DETAILED SUMMARY OF INCOME AND EXPENDITURES
July 1, 1936, to June 30, 1938

INCOME

Classification	Receipts July 1, 1936, to June 30, 1937	Receipts July 1, 1937, to June 30, 1938	Total Receipts July 1, 1936, to June 30, 1938
State Funds:			
Balance on hand, July 1, 1936	\$ 3,248,665.64	\$	\$ 3,248,665.64
Short-term bond sales .....	.....	1,000,000.00	1,000,000.00
Motor vehicle license fees	2,559,574.88	2,942,163.19	5,501,738.07
Gasoline tax	9,310,924.89	9,921,539.58	19,232,464.47
Motor transportation fees	998,096.45	832,116.85	1,830,213.30
Interest on accounts receivable	592.39	230.82	823.21
Fines for traffic law violations	27,871.78	31,815.99	59,687.77
Sub-totals of state funds	\$16,145,726.03	\$14,727,866.43	\$30,873,592.46
County Funds:			
Cash remitted to state	\$ 138,333.41	\$ 227,248.94	\$ 365,582.35
Construction work paid for direct	4,900.00	500.00	5,400.00
Sub-totals of county funds	\$ 143,233.41	\$ 227,748.94	\$ 370,982.35
Federal Government Funds:			
Cash remitted to state	\$ 5,735,102.17	\$ 3,830,931.44	\$ 9,566,033.61
Sub-totals of federal funds	\$ 5,735,102.17	\$ 3,830,931.44	\$ 9,566,033.61
Miscellaneous Funds:			
Cash remitted to state	\$ 62,229.68	\$	\$ 62,229.68
Construction work paid for direct	8,690.83	.....	8,690.83
Sub-total of miscellaneous funds	\$ 70,920.51	\$	\$ 70,920.51
Grand total income	\$22,094,982.12	\$18,786,546.81	\$40,881,528.93

EXPENDITURES

Classification	Expended July 1, 1936, to June 30, 1937	Expended July 1, 1937, to June 30, 1938	Total Expended July 1, 1936, to June 30, 1938
New construction (primary highways)	\$ 4,680,447.83	\$ 2,481,677.08	\$ 7,162,124.91
Major additions and betterments	3,901,002.27	2,762,074.40	6,663,076.67
Construction (secondary highways)	1,585,771.14	561,360.82	2,147,131.96
Special maintenance (primary highways)	235,812.89	374,901.80	610,714.69
Special maintenance (secondary highways) .....	.....	42,459.78	42,459.78
Cooperation in forest road work	22,500.00	65,000.00	87,500.00
Minor additions and betterments (primary)	204,298.69	195,218.61	399,517.30
Minor additions and betterments (secondary)	95,262.44	106,875.01	202,137.45
General maintenance (primary highways)	2,269,105.42	2,660,667.24	4,929,772.66
General maintenance (secondary highways)	529,846.24	677,920.10	1,207,766.34
Operation of drawbridges and ferries (primary)	35,252.04	19,662.29	54,914.33
Operation of drawbridges and ferries (secondary)	15,257.19	22,366.51	37,623.70
Rights of way, maintenance stations, etc. (primary)	664,488.65	587,115.20	1,251,603.85
Rights of way, quarries, etc. (secondary)	96,891.86	84,197.32	181,089.18
State parks	48,755.43	83,944.35	132,699.78
Equipment and supplies holding account	149,175.69	92,236.94	241,412.63
Miscellaneous holding accounts	96,469.27	Cr. 1,882.91	94,586.36
Retirement of bonds	2,275,000.00	3,300,000.00	5,575,000.00
Interest and other bond expenses	1,036,038.08	930,955.54	1,966,993.62
Administration and supervision	352,121.03	401,913.45	754,034.48
Surveys (primary highways)	180,715.22	252,898.47	433,613.69
Surveys (secondary highways)	40,336.69	37,623.69	77,960.38
Engineering county construction .....	.....	.....	.....
Travel and information department	78,816.55	109,689.07	188,505.62
State traffic surveys	14,428.23	105,587.13	120,015.36
Miscellaneous general expense	131,435.34	66,536.33	197,971.67
Contribution to state police	267,698.44	376,848.34	644,546.78
Contribution to counties	1,604,383.69	2,121,383.94	3,725,767.63
Contribution to general fund	191,981.85	.....	191,981.85
Totals	\$20,803,292.17	\$18,519,230.50	\$39,322,522.67

TABLE NO. 2
SUMMARY OF EXPENDITURES
July 1, 1936, to June 30, 1938

Classification	Total Amount Expended	Cooperation in Expenditures				Miscellaneous Contributors
		State	County	Federal Government		
New construction	\$ 7,162,124.91	\$ 2,053,603.44	\$ 172,296.08	\$ 4,927,451.78	\$ 8,773.61	
Major additions and betterments	6,663,076.67	2,921,535.79		3,679,393.98	62,146.90	
Construction (secondary highways)	2,147,131.96	1,178,594.11	9,350.00	959,187.85		
Special maintenance (primary highways)	610,714.69	610,714.69				
Special maintenance (secondary highways)	42,459.78	42,459.78				
Cooperation in forest road work	87,500.00	Cr. 101,836.27	189,336.27			
Minor additions and betterments (primary)	399,517.30	399,517.30				
Minor additions and betterments (secondary)	202,137.45	202,137.45				
General maintenance (primary highways)	4,929,772.66	4,929,772.66				
General maintenance (secondary highways)	1,207,766.34	1,207,766.34				
Operation of drawbridges and ferries (primary)	54,914.33	54,914.33				
Operation of drawbridges and ferries (secondary)	37,623.70	37,623.70				
Rights of way, maintenance stations, etc. (primary)	1,251,603.85	1,251,603.85				
Rights of way, quarries, etc. (secondary)	181,089.18	181,089.18				
State parks	132,699.78	132,699.78				
Equipment and supplies (holding account)	241,412.63	241,412.63				
Miscellaneous holding accounts	94,586.36	94,586.36				
Retirement of bonds	5,575,000.00	5,575,000.00				
Interest and other bond expense	1,966,993.62	1,966,993.62				
Administration and supervision	754,034.48	754,034.48				
Surveys (primary highways)	433,613.69	433,613.69				
Surveys (secondary highways)	77,960.38	77,960.38				
Travel and information department	188,505.62	188,505.62				
State traffic surveys	120,015.36	120,015.36				
Miscellaneous general expense	197,971.67	197,971.67				
Contribution to state police	644,546.78	644,546.78				
Contribution to counties	3,725,767.63	3,725,767.63				
Contribution to general fund	191,981.85	191,981.85				
Totals	\$39,322,522.67	\$29,314,586.20	\$ 370,982.35	\$ 9,566,033.61	\$ 70,920.51	

TABLE No. 3

RECORD OF MILEAGES OF VARIOUS CLASSES OF HIGHWAY
IMPROVEMENT AND MAINTENANCE WORK PERFORMED
ON THE PRIMARY STATE HIGHWAY SYSTEM

The mileages given in these tables include all state and county cooperative work, all federal aid work, and such county work on state highways as has been paid for on vouchers drawn by the State Highway Department. Forest road work and work performed by county forces or under county contracts are not included.

NEW CONSTRUCTION

Year	Concrete Pavement (Miles)	Bitu- minous Pavement (Miles)	Bitu- minous Macadam Wearing Surface (Miles)	Rock and Gravel Surfacing (Miles)	Grading (Miles)	Bridges Over 20 Feet (No.)	Grade Separa- tions (No.)
1913-1930	188.4	551.5	339.1	2,472.0	2,912.5	723	15
1931	0.7	.....	134.9	82.3	95.4	34	1
1932	7.6	.....	126.7	81.1	31.1	34	4
1933	16.8	.....	61.9	65.6	55.6	30	....
1934	17.5	.....	103.8	15.2	33.2	70	5
1935	4.4	.....	10.3	28.8	17.5	17	3
1936	3.9	0.1	25.8	2.8	18.4	36	17
1937	6.1	0.8	79.9	18.2	38.8	18	8
1938	8.7	.....	31.3	96.0	25.9	15	5
Totals	254.1	552.4	913.7	2,862.0	3,228.4	977	58

RECONSTRUCTION AND BETTERMENT

Year	Pavement Resurfacing and Widening (Miles)	Non-skid Treat- ment of Pavement (Miles)	Rock Surface Oiling (Miles)	Rock and Gravel Resurfacing (Miles)	Grade Widening (Miles)
1913-1930	54.0	239.7	1,572.1	708.8	337.2
1931	3.8	169.6	247.9	105.1	168.8
1932	50.3	3.0	84.4	93.0	205.4
1933	20.1	.....	9.8	19.7	72.7
1934	40.8	.....	72.4	35.5	38.8
1935	16.0	.....	11.5	23.8	14.7
1936	42.6	.....	240.5	124.1	106.3
1937	54.8	.....	114.0	146.7	103.4
1938	15.5	.....	273.7	52.2	65.2
Totals	297.9	412.3	2,626.3	1,308.9	1,112.5

MAINTENANCE

Year	Concrete Pavement (Miles)	Bitu- minous Pavement (Miles)	Bitu- minous Macadam Surfac- ing (Miles)	Oiled Rock Surfac- ing (Miles)	Unoiled Rock Surfac- ing (Miles)	Graded and Un- improved Earth Road (Miles)	Total (Miles)
1931	216	599	399	1,543	964	254	3,975
1932	217	600	516	1,451	895	366	4,045
1933	235	592	665	1,380	1,080	262	4,214
1934	238	534	827	1,428	1,009	248	4,284
1935	246	582	854	1,423	982	341	4,428
1936	250	580	918	1,656	750	406	4,560
1937	286	581	1,082	1,694	715	233	4,591
1938	302	568	1,078	1,856	542	274	4,620

See previous reports for details covering years prior to 1931.

TABLE NO. 4

YEARLY EXPENDITURES ON WORK HANDLED UNDER THE
SUPERVISION OF THE STATE HIGHWAY COMMISSION

Years 1917 to 1938

Year	State Funds	County Funds	Government Funds	Miscel- laneous Contributor's Funds	Totals
1917	\$ 674,249.61	\$ 270,162.37	\$	\$	\$ 944,411.98
1918	2,214,007.87	439,562.42	.....	.....	2,653,570.29
1919	6,248,304.16	368,550.01	224,851.60	.....	6,841,705.77
1920	11,381,606.97	868,539.59	1,096,027.33	17,661.62	13,363,835.51
1921	15,000,824.65	985,831.42	2,181,956.65	46,378.16	18,214,990.88
1922	7,724,688.96	3,814,402.13	1,043,695.07	33,341.49	12,616,127.65
1923	7,287,991.77	2,199,707.40	1,719,088.71	129,634.73	11,336,422.61
1924	6,916,867.91	1,586,176.49	1,118,777.53	94,241.61	9,716,063.54
1925	10,611,283.45	1,327,243.26	1,327,328.92	62,500.74	13,328,356.37
1926	7,927,130.75	715,701.37	1,264,688.74	78,916.59	9,986,437.45
1927	8,474,609.91	618,679.22	1,111,521.64	58,632.08	10,263,442.85
1928	8,975,204.79	683,625.95	582,440.20	26,973.39	10,268,244.33
1929	10,160,542.57	532,907.15	624,415.28	9,969.29	11,327,834.29
1930	12,808,014.45	280,829.24	1,565,288.34	13,804.57	14,667,936.60
1931	11,108,835.57	256,811.39	4,535,069.46	.....	15,900,716.42
1932	10,962,369.81	165,499.67	1,703,369.15	63,251.92	12,894,490.55
1933	9,740,950.02	168,028.79	2,723,724.39	26,912.05	12,659,615.25
1934	9,397,515.89	174,720.24	6,023,993.01	3,522.50	15,599,751.64
1935	15,564,605.67	133,562.57	4,165,503.33	10,000.00	19,873,671.57
1936	15,320,229.17	129,233.41	6,375,343.26	8,773.61	21,833,579.45
1937	14,997,192.40	80,174.48	4,589,894.89	62,146.90	19,729,408.67
1938 (to June 30)	5,597,937.32	177,574.46	911,075.64	.....	6,686,587.42
Totals	\$209,094,963.67	\$15,977,523.03	\$44,888,053.14	\$746,661.25	\$270,707,201.09

TABLE NO. 5

STATE FUNDS RECEIVED AND EXPENDED BY THE STATE
HIGHWAY COMMISSION, 1917 TO 1938

Year	Net Receipts (State Funds Only)	Net Expenditures (State Funds Only)
1917 (Including \$94, 418.14 balance from 1916)	\$ 1,802,190.22	\$ 674,249.61
1918	1,759,600.15	2,214,007.87
1919	7,458,614.05	6,248,304.16
1920	11,320,354.05	11,381,606.97
1921	13,550,136.40	15,000,824.65
1922	9,608,966.45	7,724,688.96
1923	7,664,977.79	7,287,991.77
1924	6,115,536.48	6,916,867.91
1925	*10,231,908.30	†10,611,283.45
1926	7,345,080.19	7,927,130.75
1927	8,627,279.00	8,474,609.91
1928	8,721,396.09	8,975,204.79
1929	10,658,473.58	10,160,542.57
1930	13,897,663.65	12,808,014.45
1931	10,930,545.38	11,108,835.57
1932	*10,075,665.72	†10,962,369.81
1933	*9,685,378.51	9,740,950.02
1934	10,678,849.29	9,397,515.89
1935	*16,347,505.71	†15,564,605.67
1936	13,069,273.13	15,320,229.17
1937	*14,323,134.05	†14,997,192.40
1938 (to June 30)	6,781,441.74	5,597,937.32
Totals	\$210,653,969.93	\$209,094,963.67
Balance on hand July 1, 1938 .....	.....	†1,559,006.26
Total .....	.....	\$210,653,969.93

* Includes \$3,011,805 received from sale of refunding bonds in 1925, \$1,001,318.86 from sale of short-term bonds in 1932, \$1,460,686.71 from sale of short-term bonds in 1933, \$2,893,283.86 from sale of refunding bonds in 1935, and \$1,000,000 from sale of short-term bonds in 1937.

† \$75,000 of the \$150,000 revolving fund is included in the balance on hand, July 1, 1938, and \$75,000 in the expenditure column for the year 1937.

‡ Includes \$3,000,000 used to refund short-term bonds in 1925, \$1,000,000 to retire short-term bonds in 1932, \$500,000 in 1937, and \$500,000 in 1938, and \$3,500,000 to retire Oregon Coast Bridge bonds in 1935, and \$700,000 in 1936.

TABLE No. 6

SCHEDULE OF YEARLY INCOMES FROM DIFFERENT SOURCES
1917 to 1938, Inclusive

Source of Income	1917 to 1931 Inclusive	1932	1933	1934	1935
	\$ 94,418.14	\$	\$	\$	\$
Balance on hand, December 1, 1916	43,236,097.44	1,001,318.86	1,460,686.71	1,016,000.00	5,413,817.03
Bond sales (including accrued interest)	45,395,624.70	3,178,932.63	2,043,084.96	1,876,039.76	2,419,379.29
Motor vehicle license fees	37,630,608.05	5,591,823.14	5,954,052.71	7,165,967.51	7,817,198.85
Gasoline and distillate tax	937,868.55	248,196.74	195,140.40	603,032.66	678,609.13
Motor transportation	1,724,032.33				
One-quarter mill tax	481,932.55	39,689.12	21,202.56	357.34	576.53
Interest on bank balances	192,140.02	15,705.23	11,211.17	17,452.02	17,924.88
Fines for traffic law violations					
Sub-totals (state funds)	\$129,692,721.78	\$10,075,665.72	\$ 9,685,378.51	\$10,678,849.29	\$16,347,505.71
County cooperation	14,948,729.41	165,499.67	168,028.79	174,720.24	133,562.57
Federal government cooperation	18,395,149.47	1,703,369.15	2,723,724.39	6,023,993.01	4,165,503.33
Miscellaneous cooperation	572,054.27	63,251.92	26,912.05	3,522.50	10,000.00
Totals	\$163,608,654.93	\$12,007,786.46	\$12,604,043.74	\$16,881,085.04	\$20,656,571.61

TABLE No. 6—Continued
 SCHEDULE OF YEARLY INCOMES FROM DIFFERENT SOURCES
 1917 to 1938, Inclusive

Source of Income	1917 to 1935 Inclusive	1936	1937	1938 (to June 30)	Dec. 1, 1916 to June 30, 1938
Balance on hand, December 1, 1916	\$ 94,418.14	\$	\$	\$	\$ 94,418.14
Bond sales (including accrued interest)	52,127,920.04	700,000.00	1,000,000.00		*53,827,920.04
Motor vehicle license fees	54,913,061.34	2,436,752.57	2,904,902.16	2,098,843.51	62,353,559.58
Gasoline and distillate tax	64,159,650.26	9,115,192.59	9,780,984.63	4,104,169.33	87,159,997.01
Motor transportation	2,662,847.48	790,500.62	604,801.20	565,980.56	4,624,129.86
One-quarter mill tax	1,724,032.33				1,724,032.33
Interest on bank balances	543,758.10	322.06	659.87	7.95	544,747.98
Fines for traffic law violations	254,433.32	26,505.29	31,785.99	12,440.39	325,164.99
Sub-totals (state funds)	\$176,480,121.01	\$13,069,273.13	\$14,323,134.05	\$ 6,781,441.74	\$210,653,969.93
County cooperation	15,590,540.68	129,233.41	80,174.48	177,574.46	15,977,523.03
Federal government cooperation	33,011,739.35	6,375,343.26	4,589,894.89	911,075.64	44,888,053.14
Miscellaneous cooperation	675,740.74	8,773.61	62,146.90		746,661.25
Totals	\$225,758,141.78	\$19,582,623.41	\$19,055,350.32	\$ 7,870,091.84	\$272,266,207.35

* Includes \$3,011,805 received in connection with refunding of \$3,000,000 of short-term bonds in 1925, \$1,001,318.86 received from sale of six-month bonds in 1932, \$1,460,686.71 received from sale of short-term bonds in 1933 and \$1,000,000 in 1937. In connection with the construction of the five Oregon Coast bridges, PWA project, \$4,200,000 of short-term bonds were issued, of which \$1,000,000 were sold in 1934, \$2,500,000 in 1935, and \$700,000 in 1936. \$3,000,000 of these bonds were refunded by a like amount of twenty-year bonds sold in 1935, and the balance of \$1,200,000 was paid from current revenues.

TABLE No. 7
SCHEDULE OF YEARLY EXPENDITURES
Years 1917 to 1938, Inclusive

The expenditures in this table include all expenditures in connection with work handled under the direct supervision of the State Highway Commission during the period of December 1, 1916, to June 30, 1938. They do not include expenditures by the Federal Government and counties on forest highway work, and they do not include expenditures in connection with market road work, but they do include expenditures during 1934, 1935, 1936 and 1937, for the construction of the five Coast Bridge PWA Projects.

Classification of Expenditures	1917 to 1931 Inclusive	1932	1933	1934	1935
New construction (primary highways)	\$ 79,785,756.39	\$ 1,765,483.90	\$ 1,832,933.53	\$ 2,638,006.47	\$ 4,857,533.91
Construction (secondary highways) .....	.....	542,986.55	436,058.90	1,395,465.57	969,004.69
Major additions and betterments	10,658,665.55	2,860,236.70	2,192,315.55	2,915,153.20	1,617,495.98
Special maintenance, primary highways	4,214,422.63	89,550.60	112,323.87	148,268.28	155,456.07
Cooperation in forest road work	5,069,971.41	202,700.00	138,913.87	28,416.93	52,501.65
Minor additions and betterments	4,100,421.02	422,720.29	122,152.14	179,349.13	161,381.65
General maintenance (primary highways)	18,173,568.59	1,804,703.71	1,572,643.39	1,770,570.81	1,849,887.74
Maintenance and betterments (secondary highways) .....	.....	159,957.76	388,759.82	499,218.16	505,270.76
Operation of drawbridges and ferries (primary)	255,189.01	88,037.91	100,869.89	130,611.94	136,844.08
Rights of way, maintenance stations, quarries, etc. (primary)	577,302.70	198,073.51	237,106.42	212,208.30	159,009.27
Rights of way, quarries, etc. (secondary) .....	.....	.....	.....	.....	30,625.47
Parks and timber preservations	329,415.69	43,734.66	12,330.95	12,152.85	28,362.71
Equipment and supplies (holding account)	357,567.83	Cr. 293,865.66	Cr. 122,784.75	Cr. 155,025.19	Cr. 49,598.73
Miscellaneous holding accounts .....	.....	.....	.....	.....	31,508.33
Retirement of bonds	14,708,250.00	2,975,000.00	1,975,000.00	2,175,000.00	5,675,000.00
Interest and other bond expense	17,897,635.98	1,370,444.71	1,292,444.91	1,250,010.02	1,228,652.23
Administration and general supervision	2,700,020.89	217,778.26	219,891.44	263,233.99	290,676.96
Surveys (primary highways)	1,472,937.86	264,636.71	158,314.92	169,248.10	191,420.45
Surveys (secondary highways) .....	.....	10,826.26	36,561.86	33,192.70	18,944.15
Engineering county construction	184,047.71	6,196.56	15,098.28	2,341.80	745.26
Travel and information department .....	.....	.....	.....	.....	7,197.13
Miscellaneous general expense	434,376.50	9,874.57	51,045.68	58,813.63	88,168.96
Enforcement of traffic laws	510,606.78	155,353.55	287,634.48	273,514.95	277,582.85
Contribution to counties .....	.....	.....	1,600,000.00	1,600,000.00	1,600,000.00
Totals	\$161,430,096.54	\$12,894,490.55	\$12,659,615.25	\$15,599,751.64	\$19,873,671.57

TABLE NO. 7.—Continued
SCHEDULE OF YEARLY EXPENDITURES
Years 1917 to 1938, Inclusive

Classification of Expenditures	1917 to 1935 Inclusive	1936	1937	1938 (to June 30)	Dec. 1, 1916, to June 30, 1938
New construction (primary highways)	\$ 90,879,714.20	\$ 5,346,505.61	\$ 3,215,891.77	\$ 807,935.35	\$100,250,046.93
Construction (secondary highways)	3,333,525.71	1,726,000.20	593,672.40	193,176.66	5,946,374.97
Major additions and betterments	20,243,806.98	3,652,265.28	3,655,351.37	572,243.74	28,123,667.37
Special maintenance, primary highways	4,720,021.45	238,185.58	306,463.74	162,291.22	5,426,961.99
Special maintenance, secondary highways	5,492,503.86	205,000.00	18,929.40	23,530.38	42,459.78
Cooperation in forest road work	4,986,024.23	213,616.49	205,450.15	Cr. 25,000.00	5,785,003.86
Minor additions and betterments	25,171,374.24	2,113,839.49	2,630,785.10	52,342.75	5,457,433.62
General maintenance (primary highways)	1,553,206.60	566,854.54	774,578.40	1,107,447.70	31,023,446.53
Maintenance and betterments (secondary highways)	711,602.83	87,521.69	21,886.79	379,007.47	3,273,647.01
Operation of drawbridges and ferries (primary)	1,383,700.20	670,330.66	614,109.78	6,181.64	827,192.95
Rights of way, maintenance stations, quarries, etc. (primary)	30,625.47	118,573.85	58,396.14	256,479.06	2,924,619.70
Parks and timber preservations	425,996.86	79,889.94	45,454.04	43,857.07	251,452.53
Equipment and supplies (holding account)	Cr. 263,706.50	17,714.94	262,583.98	47,078.99	598,419.83
Miscellaneous holding accounts	31,508.33	Cr. 19,101.05	51,877.53	Cr. 42,686.45	Cr. 26,094.03
Retirement of bonds	27,508,250.00	2,950,000.00	2,800,000.00	60,266.65	124,551.46
Interest and other bond expense	23,039,187.85	1,090,038.69	984,228.06	1,800,000.00	*35,058,250.00
Administration and general supervision	3,691,601.54	333,610.62	378,118.95	453,428.39	25,566,882.99
Surveys (primary highways)	2,256,558.04	174,182.53	230,938.33	205,192.82	4,608,523.93
Surveys (secondary highways)	99,524.97	40,489.56	43,977.92	126,494.28	2,788,173.18
Engineering county construction	208,429.61	832.55	15,392.44	15,392.44	199,384.89
Travel and information department	7,197.13	49,202.52	98,703.90	77,893.42	209,262.16
State traffic surveys	642,279.34	52,495.09	79,076.46	40,938.90	232,896.97
Miscellaneous general expense	287,751.00	287,751.00	† 144,369.48	23,397.31	120,015.36
Enforcement of traffic laws	1,504,692.61	326,741.28	326,741.28	173,930.00	862,541.22
Contribution to counties	4,800,000.00	1,600,000.00	2,000,000.00	173,930.00	2,293,114.89
Contribution to general fund		237,779.67	2,000,000.00	125,767.63	8,525,767.63
Totals	\$222,457,625.55	\$21,833,579.45	\$19,729,408.67	\$ 6,686,587.42	\$270,707,201.09

* Includes \$3,000,000 disbursed in connection with the refunding of short-term bonds during 1925, \$1,000,000 to retire short-term bonds during 1932, \$500,000 during 1937, and \$500,000 during 1938, and in connection with the Oregon Coast Bridge financing, \$3,500,000 in 1935, and \$100,000 in 1936.
† Includes \$75,000 disbursed to increase revolving fund.

TABLE No. 8
EXPENDITURES FOR PRIMARY HIGHWAY CONSTRUCTION WORK
CLASSIFIED BY COUNTIES

Years 1917 to 1938, Inclusive

This table gives the totals of the expenditures made for primary highway construction work in each of the several counties during the 22-year period ending June 30, 1938. It includes expenditures for new construction, additions and betterments, surveys and the engineering of county construction. It includes also state expenditures in connection with forest highway work, and the expenditures for the construction of the five Coast Highway bridge projects. It does not include expenditures for maintenance work, secondary highways, or the expenditures of the Federal Government and counties in connection with forest highway construction work.

County	Total Amount Expended	Cooperation in Expenditures			
		By State	By County	By Federal Government	By Miscellaneous Contributors
Baker	\$ 4,970,062.49	\$ 2,303,252.43	\$ 1,025,549.83	\$ 1,556,173.60	\$ 85,086.63
Benton	2,812,278.31	1,967,879.84	372,439.94	463,338.27	8,620.26
Clackamas	5,278,318.15	2,807,511.19	573,940.92	1,798,792.46	98,073.58
Clatsop	6,320,288.42	3,552,345.31	448,473.33	2,319,469.78	.....
Columbia	2,444,262.42	2,167,481.17	13,762.86	263,018.39	.....
Coos	5,825,008.35	3,631,019.23	825,197.50	1,346,766.39	22,025.23
Crook	1,228,574.62	833,427.33	232,482.50	162,664.79	.....
Curry	4,677,754.17	3,142,301.83	227,542.72	1,307,909.62	.....
Deschutes	2,492,405.97	1,416,350.66	196,336.69	860,650.83	19,067.79
Douglas	11,330,743.24	7,420,994.46	1,225,455.07	2,654,849.63	29,444.08
Gilliam	2,119,293.93	1,364,624.94	276,214.72	478,454.27	.....
Grant	2,687,655.13	1,281,998.33	197,687.40	1,207,969.40	.....
Harney	2,086,487.37	787,179.24	151,897.87	1,147,410.26	.....
Hood River	2,767,929.52	2,374,941.10	283,001.46	109,986.96	.....
Jackson	6,327,943.84	3,987,083.14	533,952.88	1,763,485.64	43,422.18
Jefferson	687,740.02	388,395.25	142,282.18	156,322.59	740.00
Josephine	3,383,600.98	2,789,781.93	110,077.78	483,741.27	.....
Klamath	5,156,282.11	2,666,666.24	782,426.92	1,672,657.61	34,531.34
Lake	2,263,662.19	1,097,263.94	257,727.91	908,670.34	.....
Lane	8,982,836.70	4,947,175.16	1,854,443.09	2,129,569.33	51,649.12
Lincoln	6,697,887.90	4,583,543.94	212,473.57	1,901,123.42	746.97
Linn	3,079,636.54	1,734,024.05	537,643.83	746,169.47	61,799.19
Malheur	3,601,530.34	2,121,415.11	270,722.44	1,179,392.79	30,000.00
Marion	3,120,386.86	1,406,479.54	284,258.78	1,429,410.09	238.45
Morrow	1,270,149.31	939,570.59	319,518.72	11,060.00	.....
Multnomah	5,291,387.46	2,262,459.13	68,527.73	2,898,253.70	62,146.90
Polk	2,544,243.50	1,773,855.62	158,311.16	612,076.72	.....
Sherman	1,761,368.61	746,727.16	274,322.61	738,571.05	1,747.79
Tillamook	4,455,863.41	2,655,137.50	542,613.85	1,232,068.79	26,043.27
Umatilla	6,371,293.39	3,577,923.12	741,971.20	2,025,090.29	26,308.78
Union	3,465,605.19	1,981,788.25	653,772.11	715,888.76	114,156.07
Wallowa	1,469,380.32	767,640.24	356,766.38	344,973.70	.....
Wasco	5,820,779.84	2,952,216.32	895,923.76	1,962,410.10	10,229.66
Washington	3,125,719.08	2,126,383.70	117,909.04	873,346.02	8,080.32
Wheeler	2,358,993.31	1,293,028.94	189,078.49	876,885.88	.....
Yamhill	3,776,695.27	2,179,335.29	466,321.33	1,120,429.57	10,609.08
Undistributed expense	559,538.86	330,292.34	.....	229,246.52	.....
Totals	\$142,613,587.12	\$ 84,359,493.56	\$15,821,028.57	\$41,688,298.30	\$744,766.69
Expended for Maintenance	\$ 37,277,601.47	\$ 37,103,655.58	\$ 105,163.73	\$ 66,887.60	\$ 1,894.56
Secondary Highways	9,613,319.18	6,439,030.96	41,420.98	3,132,867.24	.....
General Purposes	81,202,693.32	81,192,783.57	9,909.75	.....	.....
Grand Totals	\$270,707,201.09	\$209,094,963.67	\$15,977,523.03	\$44,888,053.14	\$746,661.25

TABLE No. 9
EXPENDITURES FOR PRIMARY HIGHWAY CONSTRUCTION WORK
CLASSIFIED BY HIGHWAYS
Years 1917 to 1938, Inclusive

This table gives the totals of the expenditures made for primary highway construction work upon each of the several state highways during the 22-year period ending June 30, 1938. It includes expenditures for new construction, additions and betterments, surveys and the engineering of county construction. It includes also state expenditures in connection with forest highway work, and the expenditures for the construction of the five Coast Highway bridge projects. It does not include expenditures for maintenance work, secondary highways, or the expenditures of the Federal Government and counties in connection with forest highway construction work.

Hwy. No.	Highway	Total Amount Expended	Cooperation in Expenditures			
			By State	By County	By Federal Government	By Miscel- laneous Contrib- utors
1E	Pacific, East	\$ 8,749,202.50	\$ 4,270,037.94	\$ 345,874.85	\$ 4,014,927.01	\$118,362.70
1W	Pacific, West	6,847,541.78	4,101,452.83	397,512.51	2,329,887.04	18,689.40
1	Pacific, Junction City- South	14,652,775.75	11,350,121.76	531,124.64	2,647,013.97	124,515.38
2	Columbia River	14,172,600.82	10,403,826.45	234,792.70	3,447,678.31	86,303.36
3	Oswego	931,214.36	611,304.54	205,809.82	114,100.00	—
4	The Dalles-California	6,107,172.29	2,311,203.91	1,243,292.19	2,006,519.10	46,157.09
5	John Day	4,950,285.56	2,547,388.00	660,545.24	1,742,352.32	—
6	Old Oregon Trail	9,712,433.44	5,039,933.74	872,181.57	3,618,551.63	181,766.50
7	Central Oregon	3,250,313.45	1,852,038.00	95,046.98	1,303,228.47	—
8	Oregon-Washington	2,781,088.86	2,161,566.50	461,907.95	157,614.41	—
9	Oregon Coast	24,037,554.25	14,523,569.26	2,300,959.99	7,177,809.53	35,215.47
10	Wallowa Lake	2,145,574.73	1,043,256.17	537,150.81	560,087.75	5,080.00
11	Enterprise-Lewiston	357,315.64	285,694.15	71,621.49	—	—
12	Baker-Homestead	978,281.56	354,066.32	495,476.18	128,739.06	—
13	Baker-Unity	757,694.83	415,351.84	331,113.14	11,399.85	—
14	Crooked River	449,669.88	351,163.90	98,500.98	—	—
15	McKenzie	2,062,227.97	985,622.14	458,426.07	618,179.76	—
16	Santiam	1,241,744.16	674,233.85	232,865.28	294,960.79	39,664.24
17	McKenzie-Bend	64,439.04	64,439.04	—	—	—
18	Willamette	1,242,889.01	485,213.73	311,897.95	445,777.33	—
19	Fremont	1,671,434.75	694,324.15	214,586.47	762,524.13	—
20	Klamath Falls-Lakeview	1,569,637.84	1,092,348.66	256,844.81	219,121.96	1,322.41
21	Green Springs	1,802,733.13	785,178.98	550,159.73	460,534.79	6,859.63
22	Crater Lake	1,702,411.09	1,197,712.52	188,000.00	316,698.57	—
23	Dairy-Bonanza	148,244.71	113,380.91	34,863.80	—	—
24	Burns-Crane	370,770.18	166,607.97	48,156.79	156,005.42	—
25	Redwood	955,336.53	623,698.76	54,507.82	277,129.95	—
26	Mt. Hood	2,382,942.09	1,660,432.38	507,737.08	214,772.63	—
27	Alsea	1,309,016.39	979,914.43	278,757.08	50,344.88	—
28	Pendleton-John Day	1,266,676.80	568,302.21	140,056.63	558,317.96	—
29	Tualatin Valley	2,160,314.87	1,503,477.28	201,643.95	455,193.64	—
30	Salem-Dallas	982,757.73	458,099.60	295,472.12	229,186.01	—
31	Albany-Corvallis	579,075.28	112,296.85	165,101.15	299,593.00	2,084.28
32	McMinnville-Tillamook	1,461,680.55	1,264,757.93	75,020.38	121,902.24	—
33	Corvallis-Newport	1,710,473.03	1,165,510.07	266,629.35	269,713.35	8,620.26
34	Siuslaw	1,603,900.64	1,084,246.68	476,293.56	43,360.40	—
35	Coos Bay-Roseburg	1,883,774.61	975,161.20	651,940.43	243,072.98	13,600.00
36	Pendleton-Cold Spring	433,579.94	164,985.77	191,239.44	77,354.73	—
37	Wilson River	801,967.91	369,288.24	—	432,679.67	—
38	Oregon Caves	474,036.23	460,036.23	14,000.00	—	—
39	Salmon River	399,184.22	322,766.51	12,641.65	63,776.06	—
40	Beaverton-Hillsdale	213,116.78	137,116.78	—	76,000.00	—
41	Ochoco	1,897,321.09	1,098,316.87	173,593.13	625,411.09	—
42	Sherman	1,155,101.08	353,897.44	360,879.73	438,576.12	1,747.79
43	Monmouth-Independence	69,004.69	69,004.69	—	—	—
44	Wapinitia	779,411.73	487,911.71	—	291,500.02	—
45	Umpqua	1,621,276.87	276,928.14	371,668.15	972,680.58	—
46	Wolf Creek	1,958,562.58	741,800.16	—	1,216,762.42	—
47	John Day-Burns	12,175.78	12,175.78	—	—	—
48	Lakeview-Burns	409,723.91	161,679.20	31,604.06	216,440.65	—
49	Klamath Falls-Weed	480.92	480.92	—	—	—
50	West Portland-Hubbard	138,121.19	28,745.19	—	109,376.00	—
51	Undistributed Expense	3,197,152.10	897,420.28	373,510.92	1,871,442.72	54,778.18
	Totals	\$142,613,587.12	\$ 84,359,493.56	\$15,821,028.57	\$41,688,298.30	\$744,766.69
	Expenditures for main- tenance work	\$ 37,277,601.47	\$ 37,103,655.58	\$ 105,163.73	\$ 66,887.60	\$ 1,894.56
	Expenditures for second- ary highways	9,613,319.18	6,439,030.96	41,420.98	3,132,867.24	—
	Expenditures for general purposes	81,202,693.32	81,192,783.57	9,909.75	—	—
	Grand Totals	\$270,707,201.09	\$209,094,963.67	\$15,977,523.03	\$44,888,053.14	\$746,661.25

TABLE No. 10

EXPENDITURES FOR PRIMARY HIGHWAY MAINTENANCE
WORK CLASSIFIED BY COUNTIES

Years 1917 to 1938, Inclusive

This table gives the totals of expenditures made for maintenance work in each of the several counties during the 22-year period ending June 30, 1938. It includes all expenditures for special maintenance, general maintenance and operation of drawbridges and ferries.

County	Total Amount Expended	Cooperation in Expenditures			
		By State	By County	By Federal Government	By Miscel- laneous Contrib- utors
Baker	\$ 1,532,349.97	\$ 1,531,560.19	\$ 789.78	\$	\$
Benton	962,157.13	961,841.32	315.81	.....	.....
Clackamas	941,946.73	941,705.76	240.97	.....	.....
Clatsop	1,066,002.13	1,043,406.22	21,701.35	.....	894.56
Columbia	544,787.30	544,787.30	.....	.....	.....
Coos	1,874,116.54	1,842,105.63	10,622.89	21,388.02	.....
Crook	368,439.60	368,439.60	.....	.....	.....
Curry	983,241.38	978,863.52	205.18	4,172.68	.....
Deschutes	1,014,398.96	1,014,158.86	240.10	.....	.....
Douglas	1,933,011.27	1,928,228.05	4,783.22	.....	.....
Gilliam	953,245.29	950,946.15	2,299.14	.....	.....
Grant	696,035.81	693,605.64	2,430.17	.....	.....
Harney	330,134.25	330,022.33	111.92	.....	.....
Hood River	959,771.65	959,771.65	.....	.....	.....
Jackson	1,531,971.02	1,527,148.55	4,822.47	.....	.....
Jefferson	352,355.24	352,355.24	.....	.....	.....
Josephine	668,862.67	667,221.08	1,641.59	.....	.....
Klamath	2,537,439.24	2,536,223.17	48.52	1,167.55	.....
Lake	656,386.21	656,386.21	.....	.....	.....
Lane	1,631,925.32	1,629,918.26	2,007.06	.....	.....
Lincoln	1,355,123.19	1,354,802.69	320.50	.....	.....
Linn	582,011.87	579,131.41	2,880.46	.....	.....
Malheur	968,768.88	968,309.12	459.76	.....	.....
Marion	407,244.57	407,034.16	210.41	.....	.....
Morrow	804,647.71	801,670.98	2,976.73	.....	.....
Multnomah	556,980.18	556,980.18	.....	.....	.....
Polk	557,479.55	556,880.48	599.07	.....	.....
Sherman	536,997.03	536,997.03	.....	.....	.....
Tillamook	1,271,220.15	1,261,440.56	8,779.59	.....	1,000.00
Umatilla	2,350,935.21	2,303,076.33	7,699.53	40,159.35	.....
Union	1,522,085.40	1,521,570.71	514.69	.....	.....
Wallowa	615,965.54	615,965.54	.....	.....	.....
Wasco	1,262,946.66	1,262,170.05	776.61	.....	.....
Washington	327,036.92	315,496.17	11,540.75	.....	.....
Wheeler	526,842.50	525,148.78	1,693.72	.....	.....
Yamhill	855,178.18	840,726.44	14,451.74	.....	.....
Undistributed Ex- pense	1,237,560.22	1,237,560.22	.....	.....	.....
Totals	\$37,277,601.47	\$37,103,655.58	\$105,163.73	\$ 66,887.60	\$ 1,894.56

TABLE No. 11
EXPENDITURES FOR PRIMARY HIGHWAY MAINTENANCE WORK
CLASSIFIED BY HIGHWAYS

Years 1917 to 1938, Inclusive

This table gives the totals of expenditures made for maintenance work upon each of the several primary state highways during the 22-year period ending June 30, 1938. It includes all expenditures for special maintenance, general maintenance and operation of drawbridges and ferries.

Hwy. No.	Highway	Total Amount Expended	Cooperation in Expenditures			
			By State	By County	By Federal Government	By Miscel- laneous Contrib- utors
1E	Pacific, East	\$ 1,086,254.51	\$ 1,083,340.33	\$ 2,914.18	\$	\$
1W	Pacific, West	661,563.63	655,365.70	6,197.93	.....	.....
1	Pac., Jct. City-South	2,075,298.32	2,062,426.32	12,872.00	.....	.....
2	Columbia River	3,403,854.07	3,390,403.11	12,556.40	.....	894.56
3	Oswego	84,731.03	84,731.03	.....	.....	.....
4	The Dalles-California	3,060,963.22	3,059,368.77	769.57	824.88	.....
5	John Day	1,725,701.27	1,720,643.28	5,057.99	.....	.....
6	Old Oregon Trail	3,957,746.51	3,914,328.99	3,258.17	40,159.35	.....
7	Central Oregon	414,905.15	414,889.70	15.45	.....	.....
8	Oregon-Washington	950,992.19	945,640.73	5,351.46	.....	.....
9	Oregon Coast	4,781,158.33	4,733,296.45	21,301.18	25,560.70	1,000.00
10	Wallowa Lake	1,058,058.99	1,058,058.99	.....	.....	.....
11	Enterprise-Lewiston	105,101.00	165,101.00	.....	.....	.....
12	Baker-Homestead	274,739.36	273,949.58	789.78	.....	.....
13	Baker-Unity	193,292.54	193,292.54	.....	.....	.....
14	Crooked River	65,651.10	65,651.10	.....	.....	.....
15	McKenzie	732,862.38	732,862.38	.....	.....	.....
16	Santiam	306,557.23	306,557.23	.....	.....	.....
17	McKenzie-Bend	108,562.21	108,562.21	.....	.....	.....
18	Willamette	122,454.93	122,454.93	.....	.....	.....
19	Fremont	429,130.87	429,130.87	.....	.....	.....
20	Klam. Falls-Lakeview	525,372.68	525,372.68	.....	.....	.....
21	Green Springs	804,905.26	804,905.26	.....	.....	.....
22	Crater Lake	659,884.52	659,541.85	.....	342.67	.....
23	Dairy-Bonanza	39,370.61	39,370.61	.....	.....	.....
24	Burns-Crane	83,316.17	83,219.70	96.47	.....	.....
25	Redwood	288,611.64	288,611.64	.....	.....	.....
26	Mt. Hood	1,056,255.21	1,056,255.21	.....	.....	.....
27	Alsea	481,773.36	481,773.36	.....	.....	.....
28	Pendleton-John Day	187,156.08	187,156.08	.....	.....	.....
29	Tualatin Valley	300,793.31	290,800.10	9,993.21	.....	.....
30	Salem-Dallas	190,797.51	190,744.56	52.95	.....	.....
31	Albany-Corvallis	43,852.42	43,052.42	800.00	.....	.....
32	McMinnville-Tillam'k.	1,093,370.37	1,076,132.00	17,238.37	.....	.....
33	Corvallis-Newport	856,189.01	855,868.51	320.50	.....	.....
34	Siuslaw	464,008.18	464,008.18	.....	.....	.....
35	Coos Bay-Roseburg	1,321,769.07	1,317,930.90	3,838.17	.....	.....
36	Pendleton-Cold Spr'gs	90,849.34	90,849.34	.....	.....	.....
37	Wilson River	27,112.34	27,112.34	.....	.....	.....
38	Oregon Caves	82,952.54	82,952.54	.....	.....	.....
39	Salmon River	131,539.17	131,539.17	.....	.....	.....
40	Beaverton-Hillsdale	30,673.89	28,933.94	1,739.95	.....	.....
41	Ochoco	537,634.22	537,634.22	.....	.....	.....
42	Sherman	424,503.34	424,503.34	.....	.....	.....
43	Monmouth-Independ- ence	18,018.30	18,018.30	.....	.....	.....
44	Wapinitia	191,463.76	191,463.76	.....	.....	.....
45	Umpqua	239,321.83	239,321.83	.....	.....	.....
47	Wolf Creek	36,702.21	36,702.21	.....	.....	.....
48	John Day-Burns	91,167.86	91,167.86	.....	.....	.....
49	Lakeview-Burns	103,841.77	103,841.77	.....	.....	.....
50	Klamath Falls-Weed	3,413.75	3,413.75	.....	.....	.....
51	W. Portland-Hubbard	173.12	173.12	.....	.....	.....
	Undistributed Exp.	1,271,229.69	1,271,229.69	.....	.....	.....
	Totals	\$37,277,601.47	\$37,103,655.58	\$105,163.73	\$ 66,887.60	\$ 1,894.56

TABLE No. 12
DISPOSITION OF 1936 SECONDARY HIGHWAY FUNDS

County	1935 Balance	1936 Allotment	Total Available in 1936	Mainten- ance and Better- ment Expendi- tures	Survey Expendi- tures	Federal Project Expendi- tures	State Project Expendi- tures	Rights of Way Expendi- tures	Total Expendi- tures	Expenditures in Excess of Allotments	Unac- counted Balances Trans- ferred to 1937
Baker	\$	\$ 8,355.49	\$ 8,355.49	\$ 14,334.29	\$ 102.38	\$ 139.23	\$	\$	\$ 14,575.90	\$ 6,220.41	\$
Benton		7,194.14	7,194.14	8,228.76	1,533.67	10,984.20			20,746.63	13,552.49	
Clackamas		21,516.82	21,516.82	45,125.26	4,274.75	2,517.30	64,304.68	5,853.83	122,080.82	100,564.00	
Clatsop		7,625.74	7,625.74	20,565.04	1,136.94		15,632.81		37,332.79	29,707.05	
Columbia		6,337.52	6,337.52	17,330.63	1,215.22	Cr. 3,275.04	33,671.54	2,885.00	106,827.35	100,489.83	
Coos		10,646.96	10,646.96	39,980.03	446.33	6,021.62	420.00	39.00	46,906.98	36,260.02	
Crook		2,172.87	2,172.87	14,074.94					14,074.94	11,902.07	
Curry		1,971.49	1,971.49	999.17					999.17		972.32
Deschutes	9,288.42	5,032.87	14,321.29	3,638.90					3,638.90		10,482.39
Douglas	1,342.14	13,063.83	14,405.97	20,146.36					20,146.36	5,742.39	
Gilliam		3,641.66	3,641.66	4,456.79	1,583.10				6,039.89	2,398.23	
Grant	1,466.36	3,138.26	4,604.62	2,737.42	16.00				2,753.42		1,851.20
Harney		3,062.88	3,062.88	9,044.54					9,044.54	5,981.66	
Hood River		4,634.39	4,634.39	8,677.59		236.12	29,288.47	2.50	38,206.68	33,572.29	
Jackson		13,451.07	13,451.07	18,760.59	2,415.02	414.34	43,645.44	636.70	65,872.09	52,421.02	
Jefferson		2,196.48	2,196.48	3,318.66	645.59	45,334.89		6,854.90	56,154.04	53,957.56	
Josephine		3,494.02	3,494.02	12,410.39	548.10	5,480.59			18,439.08	14,955.06	
Klamath		17,556.25	17,556.25	20,160.24	452.32	88,900.05	42,260.36	5.00	151,777.97	134,219.72	
Lake	2,339.66	4,603.78	6,943.44	8,910.31		104.36			8,914.67	1,971.23	

Lane	21,563.57	21,563.57	30,657.43	7,413.09	43,314.53	28,124.24	109,509.29	87,945.72
Lincoln	4,111.96	4,111.96	12,104.96				12,104.96	7,993.00
Linn	14,378.99	14,378.99	16,868.98	3,524.17	Cr. 4,358.61	16,994.40	36,279.73	21,900.74
Malheur	4,696.00	4,696.00	24,677.76	3,749.03	Cr. 12,066.61	2,730.43	19,060.61	14,364.61
Marion	23,072.27	23,072.27	31,949.07	710.41	11,059.19	104,756.12	176,505.06	153,432.79
Morrow	3,699.75	3,699.75	10,720.49	2,057.49	421.83	12,536.00	25,735.81	22,036.06
Multnomah	34,197.30	45,000.00	79,197.30		3,500.00	2,571.77	12,191.76	67,005.54
Polk		8,076.00	8,076.00	620.65	Cr. 45,689.35	25,765.10	17,530.24	9,454.24
Sherman	288.68	3,711.06	3,999.74				11,692.80	7,693.06
Tillamook	933.56	6,483.06	7,416.62	2,694.57		42,072.39	47,253.15	39,835.53
Umatilla	869.53	19,232.56	20,102.09	1,564.72		23,686.74	42,225.88	22,123.79
Union		8,029.00	8,029.00	271.48	2,000.00		34,803.65	26,774.65
Wallowa		3,856.50	3,856.50		9.10		4,131.48	274.98
Wasco	10,533.98	7,129.38	17,713.36	178.98		34,592.77	38,082.29	20,363.93
Washington		13,426.09	13,426.09	1,292.30	Cr. 1,406.72	49,187.56	98,825.71	85,399.62
Wheeler		1,682.90	1,682.90	49.24	609.81	1,450.76	8,528.85	6,845.95
Yamhill		10,092.51	10,092.51	1,994.01	Cr. 7,807.80	86,092.60	108,255.93	98,163.42
Totals	\$ 61,309.63	\$337,930.12	\$399,239.75	\$40,489.56	\$ 146,433.03	\$686,662.94	\$1,547,451.42	\$ 80,311.45
Multnomah County Surplus		112,069.88						
Totals	\$ 61,309.63	\$450,000.00	\$399,239.75	\$40,489.56	\$ 146,433.03	\$686,662.94	\$1,547,451.42	\$ 80,311.45

* Excluding \$11,562.50 right of way expenditures on the Tigard-Aurora Highway.

† Additional state funds expended in excess of County Ratio Allotments.

TABLE No. 13
DISPOSITION OF 1937 SECONDARY HIGHWAY FUNDS

County	1936 Balance	1937 Allotment	Total Available in 1937	Mainten- ance and Repa- irment Expendi- tures	Survey Expendi- tures	Federal Expendi- tures	State Expendi- tures	Right of Way Expendi- tures	Total Expendi- tures	Expendi- ment Excess of Allotments	Unex- pended Balances Trans- ferred to 1938
Baker	\$	\$ 8,355.49	\$ 8,355.49	\$ 23,692.08	\$ 145.67	\$ 8,447.83			\$ 32,285.58	\$ 23,930.09	\$
Benton		7,194.14	7,194.14	10,124.21	526.22	15,524.28		4,067.01	30,241.72	23,047.58	
Clackamas		21,516.82	21,516.82	74,238.01	9,248.90		10,950.46	359.00	94,796.37	73,279.55	
Clatsop		7,625.74	7,625.74	17,385.94	4,669.55	9,043.03	15,552.41	127.50	46,778.43	39,152.69	
Columbia		6,337.52	6,337.52	13,746.91	393.49	3,798.62	1,555.00	3,893.95	23,387.97	17,050.45	
Coos		10,646.96	10,646.96	71,941.50	4,722.23	600.00	24,454.54	3,496.00	105,214.27	94,567.31	
Crook		2,172.87	2,172.87	17,675.61					17,675.61	15,502.74	
Curry	972.32	1,971.49	2,943.81	1,246.41					1,246.41		1,697.40
Deschutes	10,482.39	5,032.87	15,515.26	6,670.18					6,670.18		8,845.08
Douglas		13,063.83	13,063.83	20,726.02			.99		20,727.01	7,663.18	
Gilliam		3,641.66	3,641.66	6,093.67	201.65			1,167.83	7,059.85	3,418.19	
Grant	1,851.20	3,136.26	4,989.46	2,341.92					2,341.92		
Harney		3,062.88	3,062.88	12,030.42	2,424.08				14,454.50	11,391.62	2,647.54
Hood River		4,634.39	4,634.39	8,443.07	1,567.73	8,192.25	1,401.50		19,609.55	14,975.16	
Jackson		13,451.07	13,451.07	16,817.46	405.24	4,566.10	4,162.68	1,266.65	27,218.13	13,767.06	
Jefferson		2,196.48	2,196.48	3,689.57	86.22	21,142.64		1,414.16	26,332.59	24,136.11	
Josephine		3,484.02	3,484.02	22,167.97	11.59	331.47		3,222.90	25,733.83	22,249.81	
Klamath		17,558.25	17,558.25	19,805.10	416.40	1,262.44	6,742.80		28,226.74	10,668.49	
Lake		4,603.78	4,603.78	6,426.86					6,426.86	1,823.08	

Lane	21,563.57	21,563.57	40,068.01	—	—	—	—	—	40,068.01	18,524.44	—
Lincoln	4,111.96	4,111.96	15,475.68	1,129.07	—	—	—	—	431.40	37,114.46	—
Linn	14,378.99	14,378.99	16,128.62	4,289.46	16,563.52	44,305.13	—	—	2,166.99	69,074.73	—
Malheur	4,696.00	4,696.00	25,766.83	1,209.59	63,801.64	—	—	—	4,085.75	90,119.81	—
Marion	23,072.27	23,072.27	61,251.33	5,725.48	Cr. 195.85	9,637.73	—	—	—	53,346.42	—
Morrow	3,699.75	3,699.75	17,989.06	890.75	—	17,199.53	—	—	—	32,379.59	—
Multnomah	67,005.54	112,005.54	3,497.95	4,829.70	149.37	—	—	—	19,573.01	—	83,955.51
Polk	8,076.00	8,076.00	45,599.42	—	16.92	5,253.85	—	—	—	42,794.19	—
Sherman	3,711.06	3,711.06	6,007.52	—	—	—	—	—	—	2,286.46	—
Tillamook	6,483.06	6,483.06	1,401.46	—	—	1,926.24	—	—	—	—	3,155.36
Umatilla	19,232.56	19,232.56	33,062.74	562.82	—	10,840.19	—	—	829.20	26,062.39	—
Union	8,029.00	8,029.00	16,251.38	344.30	161.18	—	—	—	4,600.03	13,327.89	—
Wallowa	3,856.50	3,856.50	13,142.16	—	—	—	—	—	—	9,285.66	—
Wasco	7,129.38	7,129.38	5,758.19	—	—	1,547.12	—	—	—	—	—
Washington	13,426.09	13,426.09	56,067.77	6.37	9,898.94	1,971.49	—	—	120.00	54,638.46	—
Wheeler	1,682.90	1,682.90	19,720.98	367.89	63.90	11,335.81	—	—	478.81	30,284.49	—
Yamhill	10,082.51	10,082.51	42,101.49	206.82	10,905.01	10,000.08	—	—	7,145.95	60,266.84	—
Totals	\$ 80,311.45	\$337,930.12	\$418,241.57	\$ 43,977.92	\$174,273.29	\$203,029.82	\$ 58,396.14	\$1,254,255.57	\$ 936,314.89	\$100,300.89	—
Multnomah County Surplus	—	112,069.83	—	—	—	—	—	—	—	—	—
Totals	\$ 80,311.45	\$450,000.00	\$418,241.57	\$ 43,977.92	\$174,273.29	\$203,029.82	\$ 58,396.14	\$1,254,255.57	\$ 936,314.89	\$100,300.89	—

TABLE No. 14

EXPENDITURES ON SECONDARY STATE HIGHWAYS

Years 1932 to 1938, Inclusive

This table gives the totals of expenditures for construction and maintenance of secondary state highways during the period from 1932, to June 30, 1938. The construction expenditures include new construction, surveys, rights of way, quarries and stockpile sites. The maintenance expenditures include general maintenance, special maintenance, and operation of drawbridges and ferries.

County	Construction Expenditures			Maintenance Expenditures	Minor Betterments
	Total Amount Expended	By State	By Federal Government		
Baker	\$ 36,430.77	\$ 31,237.77	\$ 5,193.00	\$ 77,753.18	\$ 8,420.40
Benton	138,245.40	89,472.31	{ 46,423.09 Co. 2,350.00 }	{ 48,312.52 }	768.64
Clackamas	280,276.83	166,451.91	113,824.92	249,952.80	29,440.19
Clatsop	144,536.83	90,925.56	{ 44,540.29 Co. 9,070.98 }	{ 101,277.35 }	5,045.54
Columbia	204,850.28	152,076.24	52,774.04	78,912.30	7,915.20
Coos	315,278.31	64,843.85	{ 248,434.46 Co. 2,000.00 }	{ 189,612.52 }	35,679.41
Crook	4,525.37	4,525.37		46,358.04	9,313.05
Curry	31,781.81	11,358.21	20,423.60	4,419.77	1,451.35
Deschutes	17,933.71	17,933.71		18,788.70	1,032.21
Douglas	46,951.59	31,461.78	15,489.81	98,334.44	2,704.61
Gilliam	33,055.33	15,709.15	17,346.18	19,839.99	3,328.76
Grant	460.16	460.18		22,278.27	2,415.84
Harney	9,444.91	9,444.91		47,613.21	3,634.96
Hood River	90,067.84	61,815.16	28,252.68	32,157.29	1,643.07
Jackson	169,010.82	119,145.36	49,865.46	74,803.04	23,088.47
Jefferson	417,825.73	94,692.88	323,132.85	14,325.53	
Josephine	144,748.32	25,619.71	119,128.61	57,231.55	1,979.48
Klamath	723,172.87	216,470.36	506,702.51	129,562.98	3,806.64
Lake	20,118.15	11,816.70	8,301.45	24,677.62	6,375.33
Lane	409,479.58	194,406.32	215,073.26	170,792.29	7,606.63
Lincoln	89,790.49	51,304.59	38,485.90	91,514.50	4,816.89
Linn	227,967.37	141,622.41	{ 63,344.96 Co. 23,000.00 }	{ 108,738.85 }	2,601.13
Malheur	313,506.81	111,451.78	202,055.03	114,765.31	12,864.30
Marion	598,800.58	298,165.47	300,635.11	155,268.07	32,283.23
Morrow	133,027.41	50,272.74	82,754.67	52,523.21	10,722.73
Multnomah	334,898.60	315,765.60	19,133.00	10,951.80	2,141.55
Polk	364,338.49	86,586.72	277,751.77	185,469.15	15,053.78
Sherman	12,415.47	12,415.47		22,525.22	8,002.38
Tillamook	103,924.42	91,816.16	12,108.26	5,600.04	2,155.01
Umatilla	104,476.17	104,476.17		105,849.48	22,870.23
Union	135,357.90	86,469.90	48,888.00	68,130.66	27,264.53
Wallowa	88,484.29	19,732.39	68,751.90	19,462.31	9,790.42
Wasco	58,077.66	51,109.66	6,968.00	21,868.81	1,130.19
Washington	260,058.46	112,805.38	147,253.08	220,071.72	25,352.98
Wheeler	34,529.61	18,583.61	{ 10,946.00 Co. 5,000.00 }	{ 49,632.87 }	7,592.12
Yamhill	195,640.08	156,754.73	38,885.35	115,997.96	25,880.68
Undistributed expense	3,723.95	3,723.95		83,871.07	10,290.44
Totals	\$6,297,212.39	\$3,122,924.17	{ \$3,132,867.24 Co. 41,420.98 }	{ \$2,939,444.42 }	\$ 376,662.37

TABLE No. 15

FOREST HIGHWAY EXPENDITURES ON STATE HIGHWAY
ROUTES CLASSIFIED BY COUNTIES

Years 1917 to 1937, Inclusive

In this table are given the expenditures that have been made in connection with forest highway construction work on the state highway system. This work was supervised by the United States Bureau of Public Roads, and the amounts of Federal Government expenditures and county expenditures here shown are as reported by that bureau. The state expenditures shown are included also in the foregoing table No. 8, but the Federal Government and county expenditures are not included in that table. For a classification of these expenditures by highways see table No. 16.

County	Total Amount Expended	Cooperation in Expenditures		
		By State	By County	By Federal Government
Baker	\$ 186,978.85	\$ 44,995.09	\$ 584.00	\$ 141,399.76
Clackamas	992,409.55	425,880.22	.....	566,529.33
Coos	231,790.61	.....	83,000.00	148,790.61
Crook	111,143.34	39,634.17	26,875.00	44,634.17
Curry	409,688.12	116,289.11	30,000.00	263,399.01
Deschutes	289,617.75	106,546.57	5,000.00	178,071.18
Douglas	1,175,887.17	314,053.51	208,636.25	653,197.41
Grant	1,608,328.78	124,490.25	250,046.25	1,233,792.28
Harney	406,575.63	.....	65,000.00	341,575.63
Hood River	578,440.94	323,743.94	.....	254,697.00
Jackson	878,125.06	271,095.20	3,438.81	603,591.05
Jefferson	227,750.42	56,000.00	13,000.00	158,750.42
Josephine	504,894.27	294,433.59	17,522.99	192,937.69
Klamath	809,600.02	228,598.60	172,454.97	408,546.45
Lake	477,600.59	111,482.27	.....	366,118.32
Lane	5,254,433.20	1,195,891.98	635,271.94	3,423,269.28
Lincoln	2,698,756.14	874,418.77	315,000.00	1,509,337.37
Linn	1,061,939.84	.....	118,000.00	943,939.84
Morrow	140,057.14	.....	75,000.00	65,057.14
Multnomah	259,039.40	46,400.00	.....	212,639.40
Tillamook	1,060,423.94	333,387.67	18,624.69	708,411.58
Umatilla	811,677.78	155,287.23	145,718.32	510,672.23
Union	384,012.95	.....	.....	384,012.95
Wallowa	360,286.52	67,951.65	39,210.35	253,124.52
Wasco	499,950.64	169,289.06	25,000.00	305,661.58
Wheeler	554,073.50	105,060.12	29,900.00	419,113.38
Totals	\$21,973,482.15	\$ 5,404,929.00	\$ 2,277,283.57	\$14,291,269.58

TABLE No. 16

FOREST HIGHWAY EXPENDITURES ON STATE HIGHWAY
ROUTES CLASSIFIED BY HIGHWAYS

Years 1917 to 1937, Inclusive

In this table are given the expenditures that have been made in connection with forest highway construction work on the state highway system. This work was supervised by the United States Bureau of Public Roads, and the amounts of Federal Government expenditures and county expenditures here shown are as reported by that bureau. The state expenditures shown are included also in the foregoing table No. 9, but the Federal Government and county expenditures are not included in that table. For a classification of these expenditures by counties see table No. 15.

Hwy. No.	Highway	Total Amount Expended	Cooperation in Expenditures		
			By State	By County	By Federal Government
1	Pacific, Junction City-South	\$ 309,776.86	\$ 182,776.86	\$ 23,000.00	\$ 104,000.00
2	Columbia River	332,531.58	117,500.00	.....	215,031.58
4	The Dalles-California ..	636,486.69	178,806.28	149,592.81	308,087.60
5	John Day	621,192.20	149,485.34	162,110.76	309,596.10
9	Oregon Coast	3,023,375.77	806,752.01	495,163.36	1,721,460.40
11	Enterprise-Lewiston	240,324.60	67,951.65	39,210.35	133,162.60
15	McKenzie	898,606.12	429,278.06	20,000.00	449,328.06
16	Santiam	1,358,458.62	56,000.00	131,000.00	1,171,458.62
18	Willamette	1,874,230.80	190,750.71	42,749.29	1,640,730.80
19	Fremont	220,014.40	879.37	.....	219,135.03
20	Klamath Falls-Lake-view	340,885.91	126,919.50	.....	213,966.41
22	Crater Lake	682,072.50	301,060.92	26,300.97	354,710.61
25	Redwood	194,160.63	130,121.32	9,522.99	54,516.32
26	Mt. Hood	1,262,063.22	577,227.85	.....	684,835.37
27	Alsea	925,708.56	400,818.40	165,000.00	359,890.16
28	Pendleton-John Day	1,116,516.43	175,287.23	202,218.32	739,010.88
32	McMinnville-Tillamook	424,250.06	149,528.51	18,624.69	256,096.86
34	Siuslaw	1,961,670.99	570,859.73	397,662.21	993,149.05
38	Oregon Caves	310,733.64	164,312.27	8,000.00	138,421.37
39	Salmon River	1,033,010.11	180,000.00	.....	853,010.11
41	Ochoco	337,999.05	144,694.29	31,775.00	161,529.76
44	Wapinitia	735,245.73	270,585.37	25,000.00	439,660.36
48	John Day-Burns	1,141,764.90	.....	97,019.49	1,044,745.41
	Secondary Highways ..	1,992,402.78	33,333.33	233,333.33	1,725,736.12
	Totals	\$21,973,482.15	\$ 5,404,929.00	\$ 2,277,283.57	\$14,291,269.58

TABLE NO. 17

STATISTICS PERTAINING TO FOREST HIGHWAY WORK
ON STATE HIGHWAYS

The statistics here given apply to highway work in the state of Oregon performed under the supervision of the United States Bureau of Public Roads. All of the work included is upon state highways at points where these highways are in or adjacent to National Forests. The work is financed under cooperative agreements between the Federal Government the State and the counties of the state, the federal funds being Oregon's proportionate share of funds annually appropriated by Congress for forest road work.

The amounts of county and Federal Government expenditures here given, and the mileages of work performed, are as reported by the United States Bureau of Public Roads. The amounts of state expenditures are as shown by the disbursement records of the State Highway Commission.

EXPENDITURES ON FOREST HIGHWAY WORK

Year	Expenditures			
	State Funds	County Funds	Government Funds	Total
1918-1919-1920	\$ 809,261.58	\$ 102,271.45	\$ 656,708.64	\$ 1,568,241.67
1921-1922	724,970.53	67,142.21	836,765.18	1,628,877.92
1923-1924	1,092,660.31	725,942.05	1,725,176.76	3,543,779.12
1925-1926	759,762.58	231,960.04	730,225.77	1,721,948.39
1927	147,859.76	105,611.36	325,542.44	579,013.56
1928	103,084.09	54,543.79	257,246.68	414,874.56
1929	82,000.00	32,600.00	421,609.32	535,609.32
1930	696,986.98	100,000.00	410,827.97	1,207,814.95
1931	653,385.58	125,000.00	1,451,085.84	2,229,471.42
1932	34,430.75	177,869.25	510,036.92	722,336.92
1933	87,217.99	*172,676.50	*1,715,374.09	*1,975,268.58
1934	28,416.93	.....	1,157,462.02	1,185,878.95
1935	Cr. 32,547.32	†282,206.16	†1,933,545.68	†2,183,204.52
1936	124,030.12	80,969.88	832,239.03	1,037,239.03
1937	93,409.12	19,090.88	1,327,423.24	1,439,923.24
Totals	\$ 5,404,929.00	\$ 2,277,283.57	\$14,291,269.58	\$21,973,482.15

* Includes prior expenditures on John Day-Burns Highway, which highway was taken into primary system in 1933.

† Includes prior expenditures on secondary highways which have been taken into the Forest Road Table during 1935.

MILEAGES OF WORK COMPLETED ON FOREST HIGHWAY PROJECTS

Year	Concrete Paving (Miles)	Grading (Miles)	Grade Widening (Miles)	Rock Surfac- ing (Miles)	Resur- facing (Miles)	Oiled Surface (Miles)	Bitu- minous Macadam (Miles)
1918		4.30					
1919		62.90					
1920		56.10		22.59			
1921		20.68		38.24			
1922		15.69		22.37			
1923		61.00		87.92			
1924		153.37		74.62			
1925		34.70		83.94			
1926		52.32		41.41			
1927		25.10	14.70	53.50			
1928		16.80	7.00	17.60			
1929		18.80	0.20	6.00			
1930		25.04	5.31	25.88			
1931		46.14	15.15	21.35			
1932		3.27	1.00	28.36			
1933		21.79		64.34	9.97		24.94
1934		10.88	4.89	17.11	0.97	53.51	24.65
1935		6.47	0.95			30.71	
1936		19.31	16.13	30.06	13.53		
1937	0.18	4.61	13.24	36.33	5.40	23.22	37.26
Totals	0.18	659.27	78.57	671.62	29.87	107.44	86.85

TABLE NO. 18
COUNTY DISBURSEMENTS FOR ROAD PURPOSES
1934 to June 30, 1938, Inclusive

County	1934	1935	1936	1937	1938 to June 30
Baker	\$ 50,378.58	\$ 52,124.59	\$ 85,630.43	\$ 66,004.99	\$ 48,459.50
Benton	71,621.66	61,753.78	73,635.10	88,624.05	40,337.77
Clackamas	251,623.43	143,994.46	203,873.65	230,470.26	174,073.57
Clatsop	138,692.60	120,260.39	185,749.33	221,146.20	106,785.18
Columbia	96,398.96	68,905.41	71,246.89	89,626.81	57,257.62
Coos	95,826.88	197,615.04	365,330.43	236,551.05	99,417.67
Crook	9,212.09	10,119.82	16,336.12	22,669.59	12,021.70
Curry	2,536.06	12,030.68	18,794.68	19,528.75	10,591.80
Deschutes	6,177.51	10,654.92	44,261.61	25,731.99	20,754.62
Douglas	132,484.01	127,024.59	137,209.45	183,526.75	122,022.40
Gilliam	31,398.73	32,142.56	49,302.31	35,746.68	15,973.68
Grant	22,102.57	27,597.20	39,283.44	29,035.48	25,445.02
Harney	32,313.94	28,405.91	35,707.11	34,480.53	18,282.00
Hood River	36,582.00	41,582.71	61,725.56	60,587.00	26,510.86
Jackson	303,321.13	108,999.38	135,891.02	165,484.38	108,089.61
Jefferson	8,816.59	7,250.84	10,558.98	10,734.21	6,170.33
Josephine	43,158.13	44,696.00	59,375.74	68,211.79	28,797.99
Klamath	104,149.00	84,564.20	112,208.83	103,073.96	74,806.66
Lake	18,697.48	27,506.31	52,627.14	42,122.07	25,056.06
Lane	205,170.87	195,284.96	216,113.81	279,341.45	154,998.46
Lincoln	55,877.87	42,192.34	77,951.38	65,035.24	31,230.30
Linn	279,270.07	279,703.13	293,465.86	421,787.61	247,809.23
Malheur	23,788.90	30,386.18	48,949.54	45,935.20	19,293.02
Marion	215,193.19	234,154.84	291,695.28	315,604.99	223,205.36
Morrow	45,628.89	63,608.82	55,410.94	49,510.75	32,218.76
Multnomah	1,476,012.18	590,244.56	608,682.16	659,231.64	352,610.83
Polk	102,702.78	54,830.19	85,463.53	77,846.21	75,732.94
Sherman	14,000.00	10,831.21	18,796.02	37,581.89	16,042.68
Tillamook	92,134.87	70,764.25	109,659.79	98,122.50	71,060.18
Umatilla	170,473.96	161,554.07	120,855.92	140,663.45	102,798.86
Union	61,531.07	60,461.99	95,420.58	81,661.27	54,881.09
Wallowa	35,589.07	34,236.37	69,533.25	49,378.44	30,415.58
Wasco	101,262.99	63,815.85	90,173.62	106,583.02	64,886.27
Washington	181,700.16	210,494.13	180,191.91	207,814.86	156,647.60
Wheeler	4,121.79	5,698.18	13,718.65	13,351.97	9,640.19
Yamhill	89,532.21	77,999.67	176,175.18	126,831.22	70,425.28
Totals	\$4,609,482.22	\$3,393,489.53	\$4,311,005.24	\$4,509,638.25	\$2,734,750.67

TABLE No. 19
COUNTY BONDS AND WARRANT INDEBTEDNESS IN
CONNECTION WITH ROADS AND BRIDGES

July 1, 1938

The information contained in this table was compiled by the State Treasurer.

County	Bonds Outstanding	Road Warrants Outstanding	Total Road and Bridge Debt	Sinking Fund	Net Road and Bridge Debt
Baker	\$ 500,000.00	\$	\$ 500,000.00	\$ 92,732.22	\$ 407,267.78
Benton	108,000.00	.....	108,000.00	32,815.57	75,184.43
Clackamas	812,980.00	.....	812,980.00	.....	812,980.00
Clatsop .....	.....	.....	.....	.....	.....
Columbia .....	.....	.....	.....	.....	.....
Coos	872,000.00	243,180.48	1,115,180.48	47,363.79	1,067,816.69
Crook	176,500.00	18,410.40	194,910.40	34,043.18	160,867.22
Curry	103,600.00	2,516.46	106,116.46	20,544.91	85,571.55
Deschutes	60,000.00	.....	60,000.00	.....	60,000.00
Douglas .....	.....	.....	.....	.....	.....
Gilliam	138,000.00	.....	138,000.00	13,668.23	124,331.77
Grant	369,000.00	.....	369,000.00	25,000.00	344,000.00
Harney	140,000.00	.....	140,000.00	10,000.00	130,000.00
Hood River	255,500.00	.....	255,500.00	100,618.43	154,881.57
Jackson	271,000.00	72,710.59	343,710.59	262,474.26	81,236.33
Jefferson	19,000.00	.....	19,000.00	1,057.38	17,942.62
Josephine .....	.....	.....	.....	.....	.....
Klamath	1,014,700.00	.....	1,014,700.00	242,784.51	771,915.49
Lake .....	.....	.....	.....	.....	.....
Lane	647,200.00	107,188.78	754,388.78	.....	754,388.78
Lincoln	15,200.00	80,972.29	96,172.29	—5,803.00	101,975.29
Linn .....	.....	.....	.....	.....	.....
Malheur	45,000.00	209.53	45,209.53	7,660.38	37,549.15
Marion .....	.....	.....	.....	.....	.....
Morrow	406,500.00	.....	406,500.00	21,317.00	385,183.00
Multnomah	12,141,500.00	.....	12,141,500.00	241,523.99	11,899,976.01
Polk .....	.....	52,738.58	52,738.58	8,201.18	44,537.40
Sherman	92,000.00	.....	92,000.00	33,072.63	58,927.37
Tillamook	47,000.00	.....	47,000.00	.....	47,000.00
Umatilla .....	.....	.....	.....	.....	.....
Union	54,000.00	5,417.67	59,417.67	19,499.67	39,918.00
Wallowa	40,000.00	36,015.91	76,015.91	24,432.64	51,583.27
Wasco	154,000.00	.....	154,000.00	85,000.00	69,000.00
Washington .....	.....	42,794.64	42,794.64	2,950.97	39,843.67
Wheeler	167,000.00	13,290.72	180,290.72	18,735.11	161,555.61
Yamhill	129,000.00	69,193.10	198,193.10	35,051.17	163,141.93
Totals	\$18,778,680.00	\$744,639.15	\$19,523,319.15	\$ 1,374,744.22	\$18,148,574.93

TABLE NO. 20
APPORTIONMENTS TO COUNTIES OF MOTOR VEHICLE FEES
1920 to 1937

Statement of the total amounts apportioned to the several counties of motor vehicle license fees and motor transportation fees prior to July 1, 1933, the total apportioned to counties under Chapter 428, Oregon Laws 1933, during the years 1933 to 1936, inclusive, and the 1937 apportionment under Chapter 78, Oregon Laws 1937.

Prior to 1917, the total net revenues from motor vehicle license fees were reverted to the counties, from 1917 to 1919, inclusive, the entire net fees were reverted to the state highway fund, from 1920 to January 1, 1930, inclusive, one quarter of the net fees were apportioned to the counties, and three quarters to the state highway fund, and from January 1, 1930, to June 30, 1933, one third of the net fees were apportioned to the counties and two thirds to the state highway fund. The net revenues from motor transportation fees, from the beginning of the act authorizing the collection of such fees in 1927, to June 30, 1933, were apportioned one quarter to the counties and three quarters to the state highway fund. Subsequent to June 30, 1933, the entire net revenues from both sources were deposited into the state highway fund. During the four-year period from 1933 to 1936, the counties received \$1,600,000 yearly. Beginning with the year 1937, the yearly apportionment was increased to 15.7 per cent of the total net state highway income, but to be not less than \$2,000,000.

County	Motor Vehicle and Motor Transport Fees, 1920 to June 30, 1933	Apportionment of \$1,600,000 Yearly, 1933 to 1936	1937 Apportionment, 15.7% of Total Net State Highway Income			
			July Payment	December Payment	February, 1938 Payment	Percentage to Each County
Baker	\$ 278,417.88	\$ 93,638.00	\$ 11,704.75	\$ 17,557.12	\$ 1,840.10	1.463,094
Benton	339,135.02	117,842.04	14,730.25	22,095.39	2,315.74	1.841,282
Clackamas	799,684.53	278,809.32	34,851.17	52,276.74	5,478.93	4.356,396
Clatsop	389,258.32	127,276.44	15,909.55	23,864.33	2,501.13	1.988,694
Columbia	294,947.13	105,411.28	13,176.41	19,764.62	2,071.46	1.647,051
Coos	504,914.07	173,731.72	21,716.47	32,574.70	3,414.04	2.714,558
Crook	63,356.71	19,236.08	2,404.51	3,606.77	378.01	0.300,564
Curry	56,652.56	21,634.16	2,704.27	4,056.41	425.14	0.338,034
Deschutes	299,991.67	97,901.56	12,237.69	18,356.55	1,923.88	1.529,712
Douglas	428,330.28	142,054.40	17,756.80	26,635.19	2,791.54	2.219,600
Gilliam	78,040.98	21,404.16	2,675.52	4,013.29	420.62	0.334,440
Grant	84,892.43	34,797.88	4,349.74	6,524.59	683.83	0.543,717
Harney	78,213.03	34,515.00	4,314.37	6,471.57	678.26	0.539,297
Hood River	219,799.89	71,699.00	8,962.38	13,443.56	1,408.97	1.120,297
Jackson	687,493.90	252,936.96	31,617.12	47,425.68	4,970.51	3.952,140
Jefferson	41,439.15	12,348.36	1,543.54	2,315.33	242.66	0.192,943
Josephine	221,166.97	80,790.32	10,098.79	15,148.18	1,587.63	1.262,349
Klamath	549,679.64	231,038.12	28,879.77	43,319.64	4,540.17	3.609,971
Lake	90,020.43	35,220.00	4,402.50	6,603.76	692.11	0.550,312
Lane	973,181.40	340,195.88	42,524.49	63,796.73	6,685.25	5.315,561
Lincoln	123,463.51	50,258.88	6,282.36	9,423.54	987.65	0.785,295
Linn	491,407.18	160,688.80	20,086.10	30,129.15	3,157.73	2.510,762
Malheur	164,120.75	67,642.48	8,455.31	12,682.96	1,329.25	1.056,914
Marion	1,191,260.71	413,578.68	51,697.33	77,546.00	8,127.31	6.462,167
Morrow	97,266.48	29,518.80	3,689.83	5,534.72	580.07	0.461,228
Multnomah	6,997,887.55	2,414,251.52	301,781.44	452,672.17	47,442.92	37,722,680
Polk	291,977.76	99,625.96	12,453.24	18,679.87	1,957.77	1.556,656
Sherman	86,604.31	20,321.28	2,540.16	3,810.24	399.34	0.317,520
Tillamook	239,566.95	80,694.48	10,086.81	15,130.21	1,585.74	1.260,851
Umatilla	553,603.67	176,309.44	22,038.63	33,058.02	3,464.69	2.754,835
Union	314,495.06	110,955.96	13,869.50	20,804.23	2,180.42	1.733,687
Wallowa	117,247.98	33,905.68	4,238.21	6,357.32	666.29	0.529,776
Wasco	277,261.76	90,653.76	11,331.72	16,997.58	1,781.45	1.416,465
Washington	580,155.69	195,407.96	24,425.99	36,638.99	3,840.00	3.053,249
Wheeler	42,924.41	15,690.96	1,961.37	2,942.05	308.35	0.245,171
Yamhill	435,921.65	148,014.88	18,501.86	27,752.09	2,908.67	2.312,732
Totals	\$18,483,781.41	\$6,400,000.00	\$ 800,000.00	\$1,200,000.00	\$ 125,767.63	100.000,000

TABLE No. 21

MILEAGES OF PRIMARY STATE HIGHWAYS

The mileages given in this table are inclusive of mileages within cities and towns.

Hwy. No.		Total Mileage of Highway	Miles of Different Types of Improvement						
			Con- crete Pave- ment	Bitu- minous Pave- ment	Bitu- minous Mac- adam	Oiled Sur- face	Uncoiled Sur- face	Graded	Unim- proved
1	Pacific, Junction City-South	232.1	64.9	159.1	8.1				
1E	Pacific, East	113.2	45.2	58.3	9.7				
1W	Pacific, West	116.6	60.6	37.0	19.0				
2	Columbia River	317.6	23.6	170.7	60.0	63.3			
3	Oswego	11.6	7.3	4.3					
4	The Dalles-California	315.3	6.5	5.8	42.1	260.9			
5	John Day	296.0	0.1		36.4	161.0	98.5		
6	Old Oregon Trail	239.4	3.2	7.4	164.3	64.5			
7	Central Oregon	246.7		0.8	57.7	112.9	13.4	61.9	
8	Oregon-Washington	144.6		22.1	16.2	76.0	30.3		
9	Oregon Coast	415.0	32.8	30.1	124.2	217.2		5.3	5.4
10	Wallowa Lake	73.0	0.2	2.9	13.5	56.4			
11	Enterprise-Lewiston	45.7					36.2	6.2	3.3
12	Baker-Homestead	88.7		0.3		24.8	32.8	11.3	19.5
13	Baker-Unity	46.2		0.4			24.7	21.1	
14	Crooked River	42.5						42.5	
15	McKenzie	111.6	0.3	0.6	33.1	77.6			
16	Santiam	101.3		0.9	31.6	13.2	19.8	31.6	4.2
17	McKenzie-Bend	19.7				19.7			
18	Willamette	87.2				20.1	33.7	29.8	3.6
19	Fremont	157.7			51.2	57.5	35.5	13.5	
20	Klamath Falls-Lake-view	92.1	0.1		42.2	5.5	44.3		
21	Green Springs	62.1		6.8	35.8	19.5			
22	Crater Lake	*75.6		0.7	53.6	21.3			
23	Dairy-Bonanza	6.7				6.7			
24	Burns-Crane	28.9				0.4	28.5		
25	Redwood	42.3			10.8	31.5			
26	Mt. Hood	102.3	11.6	13.7	34.0	43.0			
27	Alsea	59.1			3.2	35.3	20.6		
28	Pendleton-John Day	98.4			30.1	36.5	25.1		6.7
29	Tualatin Valley	46.5	22.3	24.2					
30	Salem-Dallas	14.9		9.0	5.9				
31	Albany-Corvallis	10.5	10.1	0.4					
32	McMinnville-Tillamook	47.9	7.1	5.6	11.0	24.2			
33	Corvallis-Newport	57.1	0.6	0.4	27.2	28.9			
34	Siuslaw	67.3			16.0	51.3			
35	Coos Bay-Roseburg	61.8	0.1	0.3	9.0	52.4			
36	Pendleton-Cold Springs	30.5			5.2	24.8	0.5		
37	Wilson River	54.3	1.7	0.5		14.4	0.6	9.6	27.5
38	Oregon Caves	19.1				19.1			
39	Salmon River	21.9			21.9				
40	Beaverton-Hillsdale	6.7	3.4	3.3					
41	Ochoco	104.1				56.9	47.2		
42	Sherman	68.9			15.9	43.4	9.6		
43	Monmouth-Independence	2.6		2.6					
44	Wapinitia	40.0			23.0	17.0			
45	Umpqua	50.1	0.4		33.5	16.2			
47	Wolf Creek	62.3					11.4	16.7	34.2
48	John Day-Burns	67.0			18.6		48.4		
49	Lakeview-Burns	90.1				90.1			
50	Klamath Falls-Weed	14.4			14.4				
51	West Portland-Hubbard	17.3		0.1				4.4	12.8
	Totals	4,744.5	302.1	568.3	1,078.4	1,863.5	561.1	253.9	117.2

* 17.0 miles in Crater Lake National Park dropped from system in 1938.

TABLE No. 21

MILEAGES OF PRIMARY STATE HIGHWAYS

The mileages given in this table are inclusive of mileages within cities and towns.

Hwy. No.		Total Mileage of Highway	Miles of Different Types of Improvement						
			Con- crete Pave- ment	Bitu- minous Pave- ment	Bitu- minous Mac- adam	Oiled Sur- face	Un-oiled Sur- face	Graded	Unim- proved
1	Pacific, Junction City-South	232.1	64.9	159.1	8.1				
1E	Pacific, East	113.2	45.2	58.3	9.7				
1W	Pacific, West	116.6	60.6	37.0	19.0				
2	Columbia River	317.6	23.6	170.7	60.0	63.3			
3	Oswego	11.6	7.3	4.3					
4	The Dalles-California	315.3	6.5	5.8	42.1	260.9			
5	John Day	296.0	0.1		36.4	161.0	98.5		
6	Old Oregon Trail	239.4	3.2	7.4	164.3	64.5			
7	Central Oregon	246.7		0.8	57.7	112.9	13.4	61.9	
8	Oregon-Washington	144.6		22.1	16.2	76.0	30.3		
9	Oregon Coast	415.0	32.8	30.1	124.2	217.2		5.3	5.4
10	Wallowa Lake	73.0	0.2	2.9	13.5	56.4			
11	Enterprise-Lewiston	45.7					36.2	6.2	3.3
12	Baker-Homestead	88.7		0.3		24.8	32.8	11.3	19.5
13	Baker-Unity	46.2		0.4			24.7	21.1	
14	Crooked River	42.5						42.5	
15	McKenzie	111.6	0.3	0.6	33.1	77.6			
16	Santiam	101.3		0.9	31.6	13.2	19.8	31.6	4.2
17	McKenzie-Bend	19.7				19.7			
18	Willamette	87.2				20.1	33.7	29.8	3.6
19	Fremont	157.7			51.2	57.5	35.5	13.5	
20	Klamath Falls-Lake-view	92.1	0.1		42.2	5.5	44.3		
21	Green Springs	62.1		6.8	35.8	19.5			
22	Crater Lake	*75.6		0.7	53.6	21.3			
23	Dairy-Bonanza	6.7				6.7			
24	Burns-Crane	28.9				0.4	28.5		
25	Redwood	42.3			10.8	31.5			
26	Mt. Hood	102.3	11.6	13.7	34.0	43.0			
27	Alsea	59.1			3.2	35.3	20.6		
28	Pendleton-John Day	98.4				30.1	25.1		6.7
29	Tualatin Valley	46.5	22.3	24.2					
30	Salem-Dallas	14.9		9.0	5.9				
31	Albany-Corvallis	10.5	10.1	0.4					
32	McMinnville-Tillamook	47.9	7.1	5.6	11.0	24.2			
33	Corvallis-Newport	57.1	0.6	0.4	27.2	28.9			
34	Suslaw	67.3			16.0	51.3			
35	Coos Bay-Roseburg	61.8	0.1	0.3	9.0	52.4			
36	Pendleton-Cold Springs	30.5			5.2	24.8	0.5		
37	Wilson River	54.3	1.7	0.5		14.4	0.6	9.6	27.5
38	Oregon Caves	19.1				19.1			
39	Salmon River	21.9			21.9				
40	Beaverton-Hillsdale	6.7	3.4	3.3					
41	Ochoco	104.1				56.9	47.2		
42	Sherman	68.9			15.9	43.4	9.6		
43	Monmouth-Independence	2.6		2.6					
44	Wapinitia	40.0			23.0	17.0			
45	Umpqua	50.1	0.4		33.5	16.2			
47	Wolf Creek	62.3					11.4	16.7	34.2
48	John Day-Burns	67.0			18.6		48.4		
49	Lakeview-Burns	90.1				90.1			
50	Klamath Falls-Weed	14.4			14.4				
51	West Portland-Hubbard	17.3		0.1				4.4	12.8
	Totals	4,744.5	302.1	568.3	1,078.4	1,863.5	561.1	253.9	117.2

* 17.0 miles in Crater Lake National Park dropped from system in 1938.

STATE OF OREGON
Showing
STATE HIGHWAY SYSTEM
1938

LEGEND

- Primary Highways
Secondary Highways

Scale of Miles
0 10 20 30 40



TABLE No. 22

MILEAGES OF PRIMARY STATE HIGHWAYS BY COUNTIES

The mileages given in this table are inclusive of mileages within cities and towns.

County	Total Mileage in County	Miles of Different Types of Improvement						
		Con- crete Pave- ment	Bitu- minous Pave- ment	Bitu- minous Mac- adam	Oiled Sur- facing	Unolled Sur- facing	Graded	Unim- proved
Baker	227.6	1.3	1.6	53.2	39.2	80.4	32.4	19.5
Benton	93.3	18.8	10.2	23.3	41.0	-----	-----	-----
Clackamas	77.5	30.7	1.9	37.0	2.9	-----	-----	5.0
Clatsop	110.0	16.9	34.1	17.8	16.6	11.3	12.2	1.1
Columbia	56.2	1.8	53.6	-----	-----	-----	0.8	-----
Coos	102.6	21.6	2.3	25.7	53.0	-----	-----	-----
Crook	82.9	-----	-----	-----	21.3	23.2	38.4	-----
Curry	90.1	0.4	-----	11.1	78.6	-----	-----	-----
Deschutes	203.9	0.7	3.3	47.4	119.7	11.5	21.3	-----
Douglas	200.5	26.1	74.0	35.1	65.3	-----	-----	-----
Gilliam	97.5	-----	-----	1.4	96.1	-----	-----	-----
Grant	200.0	0.1	-----	19.2	77.3	96.7	-----	6.7
Harney	186.2	-----	0.5	48.2	64.8	47.5	25.2	-----
Hood River	69.0	0.5	25.7	2.7	40.1	-----	-----	-----
Jackson	150.6	10.0	44.6	71.4	24.6	-----	-----	-----
Jefferson	50.2	-----	-----	4.8	39.7	-----	5.7	-----
Josephine	96.3	2.2	32.7	10.8	50.6	-----	-----	-----
Klamath	303.6	6.0	3.8	100.7	146.1	14.8	32.2	-----
Lake	244.9	-----	-----	51.2	110.9	66.8	16.0	-----
Lane	286.7	33.0	18.0	51.6	141.4	33.6	5.5	3.6
Lincoln	138.1	1.2	-----	69.8	46.5	20.6	-----	-----
Linn	118.0	10.0	17.5	27.3	13.2	19.9	25.9	4.2
Malheur	182.5	1.8	1.2	59.4	91.7	19.3	9.1	-----
Marion	47.4	11.4	31.9	-----	-----	-----	4.1	-----
Morrow	93.4	-----	-----	3.1	70.4	19.9	-----	-----
Multnomah	120.8	27.7	90.9	1.6	-----	-----	-----	0.6
Polk	58.1	14.7	18.5	23.8	1.1	-----	-----	-----
Sherman	63.9	0.1	-----	30.6	33.2	-----	-----	-----
Tillamook	132.7	7.2	11.1	41.1	45.9	0.6	15.9	10.9
Umatilla	236.2	0.2	24.7	120.1	80.2	11.0	-----	-----
Union	85.4	0.2	4.7	38.9	41.6	-----	-----	-----
Wallowa	84.3	-----	1.0	7.7	29.9	36.2	6.2	3.3
Wasco	165.3	0.1	19.3	37.8	98.5	9.6	-----	-----
Washington	107.5	13.7	28.5	-----	-----	-----	3.0	62.3
Wheeler	107.8	-----	-----	-----	69.6	38.2	-----	-----
Yamhill	73.5	43.7	12.7	4.6	12.5	-----	-----	-----
Totals	4,744.5	302.1	568.3	1,078.4	1,863.5	561.1	253.9	117.2

TABLE NO. 23

MILEAGES OF SECONDARY STATE HIGHWAYS BY COUNTIES

The mileages given in this table are inclusive of mileages within cities and towns.

County	Total Mileage in County	Miles of Different Types of Improvement						
		Concrete Paving	Bitu- minous Paving	Bitu- minous Macadam	Oiled Sur- facing	Unolied Sur- facing	Graded	Unim- proved
Baker	80.2	-----	-----	-----	-----	55.0	-----	25.2
Benton	32.4	-----	.1	-----	-----	32.3	-----	-----
Clackamas	82.0	11.3	18.0	-----	28.5	24.2	-----	-----
Clatsop	37.8	11.4	2.9	2.4	12.3	8.8	-----	-----
Columbia	42.1	1.0	-----	3.0	19.9	18.2	-----	-----
Coos	55.9	1.0	.9	-----	11.0	37.4	-----	5.6
Crook	80.8	-----	-----	-----	-----	59.5	21.3	-----
Curry	6.3	-----	-----	-----	-----	5.0	-----	1.3
Deschutes	53.4	-----	.6	-----	13.5	4.6	34.7	-----
Douglas	91.5	-----	-----	-----	24.4	60.6	6.5	-----
Gilliam	41.4	-----	.2	-----	1.0	14.8	12.2	13.2
Grant	19.9	-----	-----	-----	-----	5.3	2.1	12.5
Harney	98.2	-----	-----	-----	-----	23.2	25.1	49.9
Hood River	18.4	3.0	.3	.9	5.3	8.9	-----	-----
Jackson	99.5	-----	17.2	-----	42.2	7.7	13.7	18.7
Jefferson	40.6	-----	-----	-----	-----	8.2	21.1	11.3
Josephine	47.8	-----	1.0	-----	21.1	23.2	-----	2.5
Klamath	94.0	-----	.6	2.1	37.0	16.4	7.0	30.9
Lake	47.3	-----	-----	-----	-----	21.4	13.7	12.2
Lane	140.3	1.8	12.8	3.4	1.7	102.6	-----	18.0
Lincoln	44.3	-----	-----	-----	-----	38.7	5.6	-----
Linn	56.8	-----	.5	-----	27.0	29.3	-----	-----
Malheur	172.2	-----	-----	-----	15.6	42.7	55.1	58.8
Marion	114.9	.3	65.7	-----	29.6	8.2	-----	11.1
Morrow	76.4	-----	-----	-----	20.1	42.7	-----	13.6
Multnomah	14.5	9.1	1.4	-----	-----	-----	-----	4.0
Polk	57.6	.4	3.4	-----	34.0	19.8	-----	-----
Sherman	40.6	-----	-----	-----	-----	24.9	5.8	9.9
Tillamook	9.4	-----	-----	-----	-----	1.5	5.4	2.5
Umatilla	116.6	-----	.1	-----	74.8	41.7	-----	-----
Union	81.8	-----	-----	-----	28.2	47.2	2.6	3.8
Wallowa	37.1	-----	-----	-----	6.2	8.1	22.8	-----
Wasco	56.8	-----	-----	-----	-----	22.7	5.5	28.6
Washington	72.3	.3	1.5	11.8	37.4	21.3	-----	-----
Wheeler	61.3	-----	-----	-----	-----	35.7	3.1	22.5
Yamhill	65.0	8.6	2.8	-----	31.1	22.5	-----	-----
Totals	2,287.4	48.2	130.0	23.6	521.9	944.3	263.3	356.1

TABLE NO. 24
MILEAGES OF SECONDARY STATE HIGHWAYS

The mileages given in this table are inclusive of mileages within cities and towns.

Hwy. No.		Total Mileage of Highway	Miles of Different Types of Improvement						Graded	Unim- proved
			Con- crete Pave- ment	Bitu- minous Pave- ment	Bitu- minous Mac- adam	Oiled Sur- facing	Unotied Sur- facing			
102	Nehalem	89.8	12.4	3.6	12.0	39.4	22.4			
110	Mist-Clatskanie	11.9				0.4	11.5			
120	Swift	2.9	2.1	0.8						
121	Lombard Street	0.7	0.7							
122	Vancouver Avenue	0.6	0.6							
123	Northeast Portland	4.0							4.0	
130	Little Nestucca	9.4					1.5	5.4	2.5	
140	Hillsboro-Silver- ton	52.3	0.4	32.2	5.2	1.9	12.6			
141	Beaverton-Aurora	20.7	0.5	5.4		14.8				
142	Farmington	9.9				5.2	4.7			
143	Scholls	12.5				12.5				
150	Salem-Dayton	20.1				20.1				
151	Yamhill-Newberg	11.7	0.8	0.6		2.0	8.3			
152	Three Mile Lane	3.3	7.8	0.5						
153	Bellevue-Hopewell	14.9				7.0	7.9			
154	Lafayette	5.8				2.4	3.4			
155	Amity-Dayton	7.2				7.2				
160	Cascade	43.9	16.3	13.7		13.9				
161	Woodburn-Sandy	47.0	0.6	7.4		12.2	26.8			
162	North Santiam	33.1		15.5		2.9	3.7		11.1	
163	Silver Creek Falls	40.8		12.5		26.5	1.8			
180	Eddyville-Blodgett	18.9					18.9			
181	Siletz	31.9					26.3	5.6		
190	Kings Valley	26.0				1.0	25.0			
191	Dallas-Kings Val- ley	10.7		0.4		5.1	5.2			
192	Dallas-Coast	15.2				15.2				
193	Independence	6.4	0.3	3.0		3.1				
200	Territorial	41.5			3.3		38.2			
201	Alsea-Deadwood	27.4					27.4			
202	Tampico-Lewis- ville	5.5					5.5			
210	Corvallis-Eastside	10.0		0.3		9.7				
211	Albany-Lyons	25.2				0.6	24.6			
212	Halsey-Sweet Home	21.8		0.4		16.7	4.7			
220	Eugene-Swisshome	36.7				0.7	26.5		9.5	
221	Fox Hollow	15.5	1.1				5.9		8.5	
222	Springfield-Cres- well	15.6				1.0	14.6			
223	Junction City-Eu- gene	13.5	0.7	12.8						
230	Tiller-Trail	50.0					32.1	15.7	2.2	
231	Elkton-Sutherland	28.5					28.5			
232	Crater Lake North	5.3				5.3				
233	West Diamond Lake	23.9				23.9				
240	Cape Arago	14.6	0.6	0.2		7.6	6.2			
241	Coos River	19.1	0.2			0.5	12.8		5.6	
242	Powers	18.5	0.1				18.4			
243	Empire-Marsh- field	3.6		0.7		2.9				
250	Cape Blanco	5.8					4.5		1.3	
251	Port Orford	0.5					0.5			
260	Rogue River Loop	22.2		1.1		7.3	13.8			
261	Williams	25.6				13.8	9.4		2.4	
270	Little Butte	31.8				3.2	7.7	4.4	16.5	

TABLE No. 24—Continued
MILEAGES OF SECONDARY STATE HIGHWAYS

Hwy. No.		Total Mileage of Highway	Miles of Different Types of Improvement						Unim- proved
			Con- crete Pave- ment	Bitu- minous Pave- ment	Bitu- minous Mac- adam	Oiled Sur- facing	Unoled Sur- facing	Graded	
271	Sams Valley	17.2				17.2			
272	Medford-Provolt	25.4		9.6		15.8			
273	Siskiyou	7.6		7.6					
281	Hood River	18.4	3.0	0.3	0.9	5.3	8.9		
290	Sherars Bridge	29.0					19.3	5.9	3.8
291	Shaniko-Fossil	43.7					23.6	7.8	12.3
300	Wasco-Heppner	91.7		0.1		1.0	41.5	12.3	36.7
301	Fulton Canyon- Wasco	1.5					1.5		
320	Lexington-Echo	39.6				39.6			
321	Heppner-Spray	41.0					41.0		
330	Weston-Elgin	41.4		0.1		26.4	14.9		
332	Sunnyside-Uma- pine	7.2				5.7	1.5		
333	Hermiston	17.5				17.5			
334	Athena-Holdman	16.4					16.4		
335	Havana-Helix	3.9					3.9		
336	Airport	1.0				1.0			
337	Stanfield-Pendle- ton	24.4				24.4			
340	Medical Springs	42.6					42.6		
341	Starkey	17.0					10.6	2.6	3.8
342	Cove	22.2				8.4	13.8		
350	Little Sheep Creek	30.6					7.8	22.8	
351	Joseph-Wallowa Lake	6.5				6.2	0.3		
360	Warm Springs	76.1					15.3	24.6	36.2
370	O'Neil	17.9					17.9		
371	Powell Butte	17.9					7.7	10.2	
372	Century Drive	11.8		0.6			0.8	10.4	
373	Cline Falls	10.1						10.1	
374	Tumalo-Deschutes	3.9						3.9	
375	Redmond-Bend	13.5				13.5			
380	Crooked River	48.4					30.6	17.8	
390	Service Creek- Mitchell	24.9					13.9	0.8	10.2
401	Beech Creek	5.3					5.3		
402	Monument	14.6						2.1	12.5
410	Sumpter Valley	22.6					19.6		3.0
411	Haines-Anthony	12.6					11.7		0.9
412	Robinette-Home- stead	25.2					3.9		21.3
420	Midland	5.9			2.2		3.7		
421	Klamath Lake	49.7		0.6		6.1	8.6	7.0	27.4
422	Chiloquin	10.9				10.9			
423	Lower Klamath	7.6					4.1		3.5
424	Sand Creek	4.2				4.2			
425	East Diamond Lake	14.7				14.7			
426	Hatfield	2.4				2.4			
431	Warner	47.3					21.4	13.7	12.2
440	Frenchglen	62.0					12.1		49.9
441	Diamond Valley	36.2					11.1	25.1	
450	Nyssa-Adrian	21.0				12.8	8.2		
451	Vale-West	10.7					10.7		
452	Adrian-Parma	2.8				2.8			
453	Adrian-Arena Valley	3.2					3.2		
454	Adrian-Caldwell	4.4					4.4		
455	Homedale Spur	2.0					2.0		
456	I. O. N.	117.8					14.2	55.1	48.5
458	Jordan Valley	10.3							10.3
	Totals	2,287.4	48.2	130.0	23.6	521.9	944.3	263.3	356.1

TABLE No. 25

MILEAGES OF ROADS OTHER THAN STATE HIGHWAYS

The mileages given here include all local and, county roads, Indian service roads, National Park roads and forest development roads. They include both rural and city mileages. They do not include mileages of any primary secondary state highways. The data have been compiled from mileages reported by the State-wide Highway Planning Survey.

County	Total Mileage in County	Miles of Different Types of Improvement					
		Concrete Pavement	Bitu- minous Pavement	Oiled Sur- facing	Unolled Sur- facing	Graded Only	Unim- proved
Baker	1,899	1	4	3	406	1,025	460
Benton	427	8	2	6	339	63	9
Clackamas	1,705	88	141	105	1,087	168	116
Clatsop	313	27	25	8	200	50	3
Columbia	486	1	6	1	424	39	15
Coos	591	21	4	3	409	49	105
Crook	1,359	.....	.....	.....	65	712	582
Curry	239	.....	.....	1	150	22	66
Deschutes	2,449	.....	5	17	143	939	1,345
Douglas	1,452	13	8	18	814	438	161
Gilliam	557	.....	.....	.....	88	364	105
Grant	1,675	.....	.....	5	115	998	557
Harney	2,388	.....	.....	2	117	1,546	723
Hood River	376	2	4	.....	158	18	194
Jackson	1,717	6	23	32	747	519	390
Jefferson	954	.....	.....	.....	111	461	382
Josephine	813	2	2	2	314	265	228
Klamath	2,948	7	14	55	346	697	1,829
Lake	2,901	.....	.....	4	95	609	2,193
Lane	1,530	33	25	105	898	310	159
Lincoln	394	.....	.....	.....	173	72	149
Linn	1,230	1	19	20	1,052	104	34
Malheur	2,600	.....	1	1	383	283	1,932
Marion	1,330	58	165	5	1,008	56	38
Morrow	1,414	.....	.....	.....	272	662	480
Multnomah	1,559	195	518	329	451	28	38
Polk	522	3	22	5	443	15	34
Sherman	502	.....	.....	2	95	238	167
Tillamook	293	7	2	9	230	35	10
Umatilla	2,332	.....	18	.....	625	1,019	670
Union	1,254	1	10	.....	242	702	299
Wallowa	1,379	.....	3	.....	169	756	451
Wasco	1,493	1	9	27	191	993	272
Washington	1,071	6	25	55	860	79	46
Wheeler	560	.....	.....	.....	76	284	200
Yamhill	895	6	17	1	684	108	79
Totals	45,607	487	1,072	821	13,980	14,726	14,521

LIST OF PERSONS RENDERING PROFESSIONAL OR SPECIAL SERVICES

The following is a list of all persons who have rendered professional or other special service for the State Highway Commission during the period from July 1, 1936, to June 30, 1938, together with the amounts of compensation and expense allowance paid to each during that two-year period.

Name and Address	Nature of Service	Compensation
Anderson, N., Reedsport	Land appraisal	\$ 134.74
Brown & Brown, Portland	Legal service	50.00
Burdette, Leslie R., Salem	Visual standards service	50.00
Central Inspection Bureau, Portland	Steel inspection	2,211.09
Cooke, Clinton T., M. D., Portland	Visual standards service	50.00
Douglas, Thos., Lime	Cement inspection	6.82
Doyle, J. B., Portland	Tunnel inspection	125.00
Fisher, Ben S., Washington, D. C.	Legal service in connection with radio installation	250.00
Greig, E. M., Ontario	Land appraisal	5.00
Howland, A. C., Oregon City	Land appraisal	25.00
Huffman, H. M., Newberg	Land appraisal	5.00
Hunt Co., Robert W., Chicago, Illinois	Steel inspection	671.56
Ide, W. G., Hillsboro	Land appraisal	275.00
Kelley, W. C., La Grande	Land appraisal	10.00
Keyes, Chas., Roseburg	Land appraisal	10.00
Kiehle, Dr. Frederick A., Portland	Visual standards service	50.00
Labor, J. B., Portland	Land appraisal	239.00
Lilburn, A. J., Roseburg	Land appraisal	5.00
Lorenz, John E., M. A., Portland	Visual standards service	50.00
McCloskey, W. E., Beaverton	Land appraisal	25.00

McDougal, Geo. F., Portland	Technical services	50.00
McGowan, F. C., Portland	Land appraisal	240.00
McKenna, Coe A., Portland	Land appraisal	75.00
McKinley, James T., Portland	Culvert inspection	1,248.00
Metzker-Parker Co., Portland	Land appraisal	170.00
Moylan, J. E., Portland	Cement and oil inspection	4,030.36
Otis, L. S., Newberg	Land appraisal	5.00
Pankey, T. E., Gold Hill	Cement inspection	1,205.23
Pargeter, H. O., Roseburg	Land appraisal	5.00
Rawson, R. H., Portland	Piling and lumber inspection	2,232.59
Reed, Henry, Portland	Land appraisal	250.00
Runyon, J. E., Roseburg	Land appraisal	12.50
Salem Realty Board, Salem	Appraisal	188.00
Sears, Jas. D., Dr., Salem	Visual standards service	50.00
Starkweather, H. G., Portland	Land appraisal	200.00
Staver, Soule & Co., Portland	Land appraisal	210.00
Staples, V. B., Ontario	Land appraisal	5.00
Stewart, B. H., Oregon City	Land appraisal	25.00
Sloan, H. J., Ontario	Land appraisal	5.00
Warner, Fred J., Trail	Land appraisal	7.50
Walter, J. E., Newberg	Land appraisal	5.00
Weesener, A. J., Lime	Cement inspection	203.94

NOTE: No expense allowances paid in connection with above services.

LIST OF EMPLOYES OF STATE HIGHWAY COMMISSION

The following is a list of the employes of the State Highway Commission as of June 30, 1938, together with the amounts of compensation and expense allowance paid to each during the two-year period from July 1, 1936, to June 30, 1938.

Name and Title	Amount Received	
	Salary	Expense Allowance
Abbott, Charles B., junior draftsman	\$2,556.87	\$
Abbott, Julian, working foreman	3,164.26	.....
Ackley, Wayne C., truck driver	2,346.25	.....
Acuff, H. M., truck driver	2,041.59	.....
Adams, Alveron, truck driver	2,157.41	.....
Adams, Bill, bridgeman	93.60	.....
Adams, B. F., stockman	2,709.70	.....
Adams, Cleve, working foreman	2,088.96	.....
Adams, Hugh, photostat operator	3,292.04	.....
Adams, John D., truck driver	433.40	.....
Adams, J. Glenn, section foreman helper	2,560.55	.....
Addington, Frank H., junior draftsman	2,745.14	.....
Addington, M. M., section foreman	2,832.56	.....
Adlard, John, laboratory assistant	2,422.42	14.40
Agee, James H., raker	1,402.54	.....
Ahalt, H. K., blacksmith	2,812.06	.....
Ahlberg, Clarence G., rollerman	1,222.46	.....
Akins, William L., laborer	1,827.05	.....
Albenson, Axel, tunnelman's helper	375.00	.....
Alery, Marie, stenographer	2,310.00	.....
Alexander, Doyle N., laborer	886.10	.....
Aldrich, E. B., commissioner .....	.....	320.65
Aldrich, E. B., commissioner .....	.....	*184.00
Allen, B. F., section foreman helper	2,551.57	20.25
Allen, J. Clayton, truck driver	432.00	.....
Allen, M. W., draftsman	3,920.88	.....
Alling, George W., estimate clerk	3,202.26	.....
Allstott, C., mechanic	2,573.09	23.70
Almon, H. L., park caretaker	312.00	.....
Alsdorf, Charles, section foreman helper	1,463.90	.....
Alvick, Roy, engineer assistant	4,036.16	14.40
Anderson, Andy S., flagman	135.03	.....
Anderson, George G., district maintenance (officeman)	3,470.40	.....
Anderson, Gilbert D., carpenter	2,788.00	1.00
Anderson, Harold C., district maintenance (officeman)	3,372.04	.....
Anderson, Lynn A., truck driver	2,113.16	3.90
Anderson, M. H., truck driver	2,444.91	.....
Anderson, Norman, clerk	2,465.00	.....
Anderson, Patricia B., typist	10.67	.....
Anderson, Richard D., office assistant	2,071.01	28.00
Andrews, Lynn C., surface foreman	2,823.18	.....
Ansell, Leonard J., load spotter	2,398.20	7.25
Ansell, Lewis, laborer	956.65	.....
Anundson, H. M., computer	3,555.01	.....
Apperson, A. R., spotting foreman	1,640.05	3.80
Apperson, Robert C., chainman	602.36	.....
Applegate, R. F., carpenter	2,504.99	.....
Apt, Carroll, truck driver	972.48	.....
Arant, A. H., laborer	61.50	.....
Archibald, A. E., sign superintendent	3,800.40	720.80
Archibald, Milford R., office assistant	73.33	.....
Armstrong, C. B., boilerman	1,353.55	.....
Armstrong, C. H., district maintenance superintendent	5,712.00	402.35
Aronson, Ed, mechanic	3,139.54	.....

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Aronson, George O., truck driver	\$1,659.33	\$ 9.60
Aronson, Walter J., flush coater	454.06	.....
Arthurs, Burl, laborer	61.00	.....
Asburry, Raymond D., chainman	2,400.00	1.35
Aseman, Dorothy, mimeograph operator	749.33	.....
Asher, Clarence S., bridge operator	2,439.10	*17.36
Ashley, Milton, pull grader operator	1,986.15	.....
Ashwell, Dewey L., truck driver	2,152.64	.....
Ausland, Willis M., transitman	3,920.88	.....
Avery, Clifford, paint machine operator	1,472.45	.....
Avery, Earl R., lineman	1,313.23	.....
Ayer, Arthur, truck driver	795.59	.....
Ayres, Russell V., laborer	780.39	.....
Badley, R. H., section foreman helper	2,580.35	.....
Bagnall, George W., mechanic draftsman	3,920.88	.60
Bainter, E. O., section foreman	2,899.60	.....
Baird, Esther, clerk	2,070.00	.....
Baird, Ralph, laborer	628.50	.....
Bairey, Pearl, clerk	2,560.00	.....
Bakeman, Lawrence, sign crew helper	257.75	6.35
Baker, Ell, head lineman	1,564.42	2.30
Baker, George C., transitman	3,920.88	.....
Baker, Henry B., flush coater	415.48	.....
Baker, Horace M., boilerman	579.82	37.00
Baker, Roger, laborer	290.24	.....
Baker, William, laborer	74.00	.....
Balcom, A. J., laborer	1,025.25	.....
Baldock, R. H., state highway engineer	13,104.00	636.85
Balgaard, Orville M., truck driver	1,418.72	.....
Bandy, John C., draftsman	2,133.23	1.60
Bangert, J. B., painter	2,391.70	.....
Banick, A. A., laborer	1,867.96	.....
Bany, Paul J., bridge foreman	3,549.04	.....
Barbee, D. J., transitman	3,920.88	.....
Barker, Milo H., raker	2,374.96	.....
Barklow, Lyle E., truck driver	1,336.80	8.50
Barkwell, B. L., mechanic	3,092.31	44.00
Barlow, James E., truck driver	1,821.75	.....
Barnes, Lloyd E., trimmer	2,884.58	.....
Barnes, R. G., resident bridge engineer	3,792.07	15.05
Barnes, R. G., resident bridge engineer .....	.....	*5.20
Barnhart, George A., head chainman	3,190.40	.....
Barnum, R. P., pitman	952.55	.....
Barnwell, Earl E., street inspector	3,281.11	11.25
Barrett, Harry E., material inspector	1,626.44	339.71
Barrett, Harry E., material inspector .....	.....	*802.20
Barry, Pat, truck driver	200.50	2.10
Bartell, Ben J., electrician	2,514.97	.....
Bartell, Kenneth, chainman	2,400.00	.....
Bartlett, Clyde E., laborer	1,202.55	.....
Bartlett, J. P., laborer	591.30	.....
Basler, Roy V., bridgeman	2,362.12	.....
Batteen, Vernon, laborer	194.00	.....
Batzner, Leonard B., motor grader operator	2,409.88	.....
Batzner, William, bridgeman	108.00	.....
Bauer, Marion, laborer	56.95	.....
Baumgartner, Nick, laborer	170.50	.....
Baxter, Herman M., watchman	2,384.48	1.00
Baxter, Leslie D., laborer	207.64	.....

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Bayles, Charles C., draftsman	\$3,861.00	\$ 2.50
Beachy, Eli, truck driver	630.35	
Beakey, John, manager planning survey	8,160.38	413.45
Beals, Milton F., section foreman helper	2,613.94	
Beal, Robert, painter	22.40	
Beall, Carl, carpenter	1,947.35	
Beam, Guy, section foreman's helper	2,358.15	
Bean, Fremond F., man and team	140.60	
Beardsley, Marion C., draftsman	2,918.12	1.90
Bechtel, D. E., laborer	399.75	
Beck, Oscar J., laborer	1,345.95	
Becker, O. R., laborer	1,983.85	
Bedingfield, James A., assistant bridge foreman	2,983.04	
Bedingfield, Thomas, laborer	755.25	
Bedwell, E. C., laborer	1,045.05	
Beede, Fred B., laborer	892.35	
Beerman, Dorothy, key punch operator	1,089.03	
Beeson, James I., truck driver	1,863.11	
Beeson, Mildred, secretary	2,644.47	3.80
Beldin, Rae W., filing clerk	2,688.88	
Beling, E., laborer	1,954.50	
Bell, Charles, flagman	626.21	
Bell, J. R., laborer	1,648.65	
Bellamy, J. R., section foreman	2,835.46	
Bellmore, Harris C., truck driver	2,070.95	
Bellus, Leslie, mechanic	3,281.22	8.50
Belshee, Frank, chainman	1,481.58	
Bendickson, Ervin, laborer	116.00	
Benedict, A. V., resident engineer	5,038.20	10.10
Benford, Frank S., laborer	216.43	
Bengoa, Cleto, material inspector	3,220.40	14.50
Bennett, Clarence G., laborer	731.35	
Bennett, Gilbert J., truck driver	2,182.10	
Bennett, Giles E., sign crew helper	2,163.25	592.65
Benson, Harry G., right of way agent	4,578.40	873.45
Berg, Paul P., flagman	1,229.81	
Berks, George, laborer	1,519.41	
Berlin, George H., draftsman	3,920.88	
Berry, Frank J., section foreman's helper	2,551.08	30.25
Betzer, Grover C., road magnet driver	1,473.24	814.45
Betzer, R. P., signal foreman	1,274.84	465.95
Betzer, Ray, head price clerk	3,470.40	
Bewley, Carl O., watchman	1,881.87	14.45
Bickmore, E. G., district maintenance superintendent	5,712.00	225.90
Bidegary, John W., truck driver	1,475.04	
Biehler, Bert F., plant foreman	1,958.31	
Biehler, Joseph D., kettleman	696.50	
Biescke, Fred, carpenter	872.20	
Bihl, Gordon K., sign crew helper	2,326.82	531.95
Bihl, Leo F., paint machine operator	1,146.05	
Bihl, William D., street foreman	2,905.80	
Billings, George L., laborer	1,136.03	
Binder, Irl, laborer	1,600.53	
Birch, Sam, laborer	212.00	
Bishop, J. N., maintenance engineer	10,022.40	534.50
Bissell, Rex I., street inspector	3,470.40	151.04
Bisset, Ralph, truck driver	1,375.20	
Bixby, V. H., laborer	1,995.59	
Black, Charles I., laborer	381.30	
Black, William A., laborer	465.30	

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Blaisdell, Dorothy, typist	\$1,280.54	\$
Blanchard, G. A., laborer	105.50	.....
Blanchard, Joe, laborer	561.33	.....
Blankenship, Earl E., flush coater	696.56	.....
Bliss, Art, bridgeman	2,264.56	.....
Bliss, Jackson A., laborer	94.00	.....
Bliven, Howard, mechanic helper	2,509.50	.....
Blomberg, A. R., mechanic helper	2,535.79	36.70
Bloomberg, Carl W., motor grader operator	2,230.43	28.05
Blume, Sherman L., truck driver	1,060.14	2.05
Boardman, Kenneth Y., chainman	2,400.00	.....
Boardman, S. H., parks engineer	6,811.20	1,163.30
Bodewig, Edward J., truck driver	1,115.83	.....
Boeche, William, truck driver	2,149.25	.....
Boldt, Leroy, general foreman	3,654.12	.....
Bolger, Howard N., truck driver	216.60	.....
Bond, J. Ronald, Jr., carpenter	2,623.10	3.45
Bones, Walter J., section foreman helper	2,402.95	.....
Bonham, John H., truck driver	1,410.60	.....
Bonnett, C. A., engineer assistant	3,814.20	.....
Boone, George, motor grader operator	2,281.54	1.75
Booth, C. M., laborer	1,229.00	.....
Booth, E. M., locating engineer	5,151.41	74.20
Booth, L. H., laborer	27.00	.....
Borah, M. E., section foreman helper	2,593.30	.....
Borgaard, Alfred C., motor grader operator	2,027.30	2.00
Borgaard, Fred O., section foreman helper	2,327.65	2.00
Boring, William C., laborer	1,161.65	.....
Bostrack, Russell, truck driver	2,059.25	.....
Boulter, Loren, sign painter	2,224.38	.....
Bowles, T. J., lineman	1,260.98	.....
Bowman, L. A., section foreman helper	2,421.55	.....
Bowman, Roger, bridgeman	2,303.78	.....
Bowman, William, gate tender	2,277.01	.....
Bowne, W. E., chainman	2,400.00	.....
Boyd, David G., laborer	1,868.70	.....
Boyd, Elby T., bridgeman	2,005.65	.....
Boyer, Clarence E., laborer	617.40	.....
Boyer, Fred, shovel operator	3,053.63	.....
Boyer, Carl, carpenter	1,781.78	.....
Boylan, Harold, laborer	276.00	.....
Boylan, M. E., truck driver	1,382.47	.....
Bradford, D. T., carpenter	2,740.08	.....
Bradford, M. T., assistant bridge foreman	3,050.82	.....
Bragg, Ralph H., raker	2,411.85	.....
Bramblett, C. W., landscape superintendent	3,804.61	91.35
Bramblett, Clyde, section foreman helper	2,451.92	7.05
Bramblett, Dick, section foreman helper	2,453.18	3.65
Bramblett, J. C., laborer	1,891.50	.....
Branden, R. H., laborer	143.50	.....
Brannon, D., rollerman	2,063.53	76.70
Branson, A. P., draftsman	3,890.72	.....
Brassfield, G. W., shovel operator	1,198.00	.....
Breeding, Carl, truck driver	1,640.95	.....
Breedlove, Delbert, lineman	1,052.23	.....
Bressler, George, mechanic	2,938.82	.....
Bressler, Harold O., truck driver	579.00	.....
Breuser, O. W., laborer	2,165.50	.....
Brewer, Berry, section foreman helper	2,543.95	.....
Bristlin, Fred G., laborer	1,854.16	.....

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Bristow, R. E., surface foreman	\$3,161.80	\$
Broadwell, H. C., resident engineer	5,156.96	.....
Brock, Walter E., motor grader operator	2,282.90	.....
Brolliar, Edwin J., section foreman helper	2,455.55	.....
Bromley, J. G., district maintenance superintendent	5,712.00	316.20
Brookhart, H. S., laborer	1,095.35	.....
Brookhart, W. B., laborer	1,948.83	.....
Brooks, Paul, laborer	79.50	.....
Brookshire, William B., tunnelman's helper	336.00	.....
Broussard, Harold L., truck driver	934.16	.....
Brown, A. N., chainman	3,101.34	.....
Brown, Charles W., raker	1,946.08	.....
Brown, C. W., laborer	68.55	.....
Brown, Daryl, tractor operator	440.58	.....
Brown, Don, truck driver	2,216.85	.....
Brown, Ernest O., laborer	232.38	.....
Brown, Frank R., materials checker	721.29	2.10
Brown, James M., grader operator	196.50	.....
Brown, Percy M., watchman	839.86	.....
Brown, Raleigh E., paintman	1,103.17	.....
Brown, Ray E., truck driver	2,179.00	.....
Brown, Robert J., laborer	573.92	.....
Brown, Willis J., computer	1,850.00	99.10
Browning, R. C., section foreman helper	2,403.32	.....
Bruijn, John, laborer	2,012.35	.....
Brunell, Leo, mechanic	3,261.36	244.35
Buchanan, Alvin, rodman	2,400.00	.50
Buchanan, G. T., bridgeman	1,601.40	.....
Bucholtz, Lester, assistant bridge carpenter	2,422.75	.....
Bucknum, W. H., section foreman	2,894.83	1.50
Bue, Palmer W., office assistant	2,119.35	2.00
Buell, Harold D., laborer	215.05	.....
Buell, Otis H., laborer	1,222.96	.....
Bull, Barney L., section foreman	2,943.34	2.75
Bull, Paul, lineman	171.10	.....
Bunch, Sam S., section foreman	2,929.69	.....
Bunting, J. E., laborer	2,022.20	.....
Burch, John T., resident engineer	5,712.00	2.00
Burch, Lyle V., truck driver	2,170.46	.....
Burch, Roy R., traffic line foreman	3,426.60	.....
Burchett, H., bridgeman	1,520.00	.....
Burden, Don, laborer	945.68	.....
Burdette, L. Robert, optometrist	45.83	.....
Burdett, W. H., topographer	3,470.40	3.15
Burk, Clifford G., computer	3,470.40	2.35
Burkholder, E. W., bridgeman	620.00	.....
Burling, Albert, laborer	249.00	.....
Burt, A. M., section foreman	3,087.40	.....
Burt, Charles F., truck driver	384.32	.....
Burt, George W., truck driver	403.31	.....
Burtis, H. W., watchman	2,508.88	.....
Burton, H. J., motor grader operator	2,351.26	3.20
Burton, Ray, laborer	647.08	.....
Busboon, N. W., laborer	128.00	.....
Busch, Herman, pitman	341.13	.....
Busch, Vernal, flagman	1,037.94	.....
Busch, William P., assistant tabulating machine operator	400.00	.....
Bush, William H., office assistant	1,200.00	.....
Bushway, C. W., laborer	1,180.85	.....
Buswell, Ed P., truck driver	2,178.48	.....

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Buswell, E. R., truck driver	\$ 758.41	\$
Butler, N. T., laborer	83.50	.....
Buttervich, V. F., street inspector	3,356.21	37.65
Butts, Chester, laborer	1,097.15	.....
Byers, Alva J., truck driver	2,147.02	.....
Byers, Victor S., paintman	1,050.96	.....
Byington, Wayne Y., apprentice raker	786.02	.....
Bynon, George E., inventory clerk	2,832.50	104.70
Bynon, Gertrude A., stenographer	656.45	.....
Byrd, Al, bridgeman	2,056.65	.....
Cabe, W. C., man and team	544.50	.....
Cain, Charles T., section foreman	2,799.29	.....
Cairns, J. J., relief gate tender	1,854.94	.....
Calaba, Jerry, shoveler	1,617.10	.....
Calkins, Earl A., chairman	2,411.98	1.00
Callahan, T. L., laborer	1,935.50	.....
Callahan, Wilda, clerk	1,904.52	.....
Callison, R. G., blacksmith	2,764.80	.....
Cameron, Keith, assistant timekeeper	2,337.96	4.85
Cameron, Malcolm, blueprinter	2,673.28	.....
Cameron, Thomas W., raker	2,209.08	.....
Campbell, C. E., truck driver	1,794.83	.....
Campbell, C. M., carpenter	2,920.47	.....
Campbell, Dale J., laborer	985.00	.....
Campbell, Frank H., section foreman helper	2,334.75	3.75
Campbell, J. K., shop superintendent	4,166.16	.....
Campbell, Lenore, key punch operator	2,067.33	.....
Campbell, William A., section foreman	2,838.31	.....
Cannon, C. D., division office engineer	4,598.40	53.45
Cannon, Everett E., foreman	3,470.40	.....
Cantril, Jesse, grader operator	1,398.90	.....
Cantril, O., section foreman	2,674.76	.....
Card, Roger E., stakeman	1,921.20	.....
Carder, A. B., section foreman	2,896.09	4.80
Carkin, Earl T., watchman	291.33	.....
Carleton, J. C., bridge inspector	3,766.11	* 5.05
Carleton, Wayne, truck driver	980.30	.....
Carlile, Harold P., office assistant	1,588.67	.....
Carlin, Emery, section foreman helper	2,417.55	3.45
Carlin, Henry, section foreman helper	2,402.78	.....
Carlin, James H., truck driver	1,159.01	178.30
Carlson, Gus. G., laborer	1,836.40	.....
Carns, Clarence E., section foreman	2,932.71	.....
Carpenter, Kenneth N., laborer	160.00	.....
Carpenter, Lowell C., sign crew foreman	3,239.04	886.75
Carpenter, Robert W., sign crew helper	1,911.59	774.90
Carpenter, Robert W., sign crew helper .....	.....	* 57.26
Carpenter, T. T., laborer	1,756.70	.....
Carper, Henry, truck driver	1,727.80	.....
Carroll, Mary C., clerk	116.13	.....
Carson, Alfred E., watchman	437.87	.....
Carson, Clifford T., section foreman	2,784.53	.....
Carter, Clarence S., section foreman	2,767.97	.....
Carter, Florence R., stenographer	2,220.00	.....
Carter, Walter, section foreman	2,981.14	16.30
Carver, C. C., truck driver	1,050.50	.....
Carver, G. E., laborer	143.50	.....
Casebeer, George W., street foreman	2,604.76	.....
Casey, Forrest W., general foreman	2,960.58	3.40

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Casey, James A., park caretaker	\$1,200.00	\$
Cason, Paul, truck driver	1,784.16	.....
Cater, Baine H., painter	433.55	.....
Cater, Charles R., painter	550.30	.....
Cation, Lila L., stenographer	1,590.00	.....
Cattrail, John W., senior office assistant	2,631.93	.....
Cattrail, John W., senior office assistant .....	.....	* 250.76
Caulk, Eugene E., laborer	64.00	.....
Cauthers, William H., watchman	881.34	.....
Cazzell, John, bridgeman	2,131.00	7.10
Cearley, Charles, laborer	1,916.20	4.60
Cearley, R. H., truck driver	2,197.35	.....
Chamberlin, G. M., clerk	2,818.88	.....
Chandler, L. R., resident engineer	5,156.96	69.30
Chandler, M. F., stockman	2,726.06	.....
Chandler, William E., division engineer	8,966.40	605.00
Chapin, Viola, stenographer	900.00	.....
Chapman, A. L., head chainman	2,855.20	21.80
Chapman, J. C., resident engineer	5,712.00	4.45
Chapman, Merton, truck driver	2,179.15	.....
Chapman, V. L., laborer	1,989.03	.....
Chappell, Howard, painter	39.20	.....
Chase, O. A., designing engineer	6,707.88	6.90
Chase, Russell, laborer	2,208.30	.....
Cheney, Gertrude E., typist	130.32	.....
Chestnut, Floyd T., relief bridge operator	173.61	.....
Chidsey, Edward F., resident engineer	5,156.96	246.45
Chilles, David, working foreman	2,735.09	.....
Chilson, Sanford, truck driver	1,018.10	.....
Choate, J. T., truck driver	2,180.00	3.55
Choate, Keith G., pull grader operator	1,671.25	.....
Christensen, Chris, section foreman helper	2,491.96	.....
Christensen, Kenneth V., shoveler	558.52	.....
Christian, G. R., park caretaker	2,601.60	.....
Christian, Robert, laborer	133.10	.....
Clark, Delmer N., load spotter	700.16	2.60
Clark, Erwin L., sign crew foreman	3,239.04	1,118.50
Clark, Everett W., truck driver	577.00	.....
Clark, George M., truck driver	1,894.25	.....
Clark, Gordon L., painter	696.20	.....
Clark, Harold, laborer	855.79	.....
Clark, Howard V., laborer	1,562.55	.....
Clark, Joseph A., assistant bridge foreman	3,158.04	.....
Clark, S. D., truck driver	1,928.95	.....
Clasper, Matt, laborer	32.00	.....
Claus, Irving C., motor grader operator	2,280.49	.....
Clawson, Otto, mechanic	2,410.48	.....
Cleaver, John E., section foreman	2,885.29	.....
Cleveland, Fred, man and team	89.10	.....
Cleveland, L. W., truck driver	1,003.50	.....
Clifton, Charles, surface foreman	2,813.16	.....
Clinefelter, Lester, street inspector	3,189.75	.....
Clough, Robert L., laborer	185.35	.....
Clutter, Bryson, painter	2,546.63	.....
Clymer, E. H., cost analyst	4,386.16	580.85
Cochran, J. B., laborer	20.00	.....
Coffey, Victor H., resident engineer	4,813.20	85.25
Coffman, W., laborer	2,055.70	.....
Colbert, R. L., laborer	420.50	.....

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Cole, R. E., pilot car driver	\$ 422.42	\$
Coleman, Anthony, laborer	458.95	.....
Coleman, Roland W., materials inspector	3,260.73	.....
Collier, C. D., transitman	3,920.88	.....
Collier, E. A., division engineer	8,966.40	97.60
Collins, Don, laboratory assistant	1,455.65	.....
Collins, W. F., right of way agent	4,208.02	507.80
Colvi, George, mechanic helper	2,441.28	.....
Cone, Jean O., stenographer	1,239.98	.....
Confer, Harry P., section foreman	2,861.55	.....
Conley, Twain, truck driver	672.00	.....
Connors, Jack F., bridgeman	1,342.30	.....
Conner, Perry F., office assistant	2,331.35	.....
Conover, J. L., painter	294.20	.....
Conrad, J. A., laborer	340.25	.....
Converse, Carrol E., section foreman	3,059.89	.....
Conway, Matt, bridge oiler	3,240.00	.....
Cook, A. A., truck driver	2,197.81	.....
Cook, C. H., man and team	672.40	.....
Cooksley, Jack, working foreman	2,685.99	3.45
Cooper, Forrest, resident engineer	5,712.00	48.05
Cooper, Harvey G., truck driver	1,255.91	.....
Cooper, J. Glenn, section foreman	2,966.65	6.90
Cooper, Leo P., park caretaker	1,035.00	.....
Cooper, Taylor J., motor grader operator	2,218.02	.....
Coopey, Martin P., traffic survey supervisor	3,493.01	51.55
Coopey, Martin P., traffic survey supervisor		* 35.00
Copeland, Fred, laborer	78.00	.....
Corbett, R. W., truck driver	1,194.05	.....
Cordill, Elmer L., rodman	1,945.03	44.20
Cornell, Charles, chainman	2,338.06	23.15
Cornell, Holly A., chainman	316.67	.....
Cornett, Clay, transitman	3,920.88	8.95
Coseboom, M. W., carpenter	2,651.08	.....
Cottingham, Willard, section foreman helper	2,487.40	8.35
Cotton, Robert V., chainman	1,915.58	25.05
Counts, M. W., rollerman	470.59	.....
Courson, Richard F., materials inspector	1,363.23	7.80
Courtney, Burl, laborer	30.80	.....
Covert, Wm. W., truck driver	2,241.61	.....
Coville, Charles E., retort operator	724.31	3.10
Cox, Andrew N., truck driver	1,085.23	.....
Cox, Howard S., chainman	2,894.04	2.90
Cox, Norman P., section foreman helper	2,435.58	.....
Cox, Oliver R., section foreman	3,299.34	.....
Cox, Oral E., laborer	1,115.55	.....
Cox, Ray E., carpenter	2,796.14	.....
Coy, Ralph, motor grader operator	296.20	.....
Crabtree, J. Albert, office assistant	926.78	.....
Crain, M. R., bridge inspector	4,036.16	962.09
Cramblett, Harry, laborer	1,902.90	.....
Crammer, Kenneth W., laborer	70.50	.....
Crampton, William A., laborer	1,607.23	.....
Crandall, Frederick B., traffic survey supervisor	3,645.61	247.90
Crandall, Frederick B., traffic survey supervisor		* 22.16
Crane, Claude C., truck driver	1,994.00	.....
Crawley, C. C., section foreman	2,835.88	1.60
Cress, Glenn, truck driver	1,965.48	.....
Crews, W. C., supervisor of permits	5,156.96	.....

* Private car mileage.

LIST OF EMPLOYES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Cribbins, William R., truck driver	\$2,280.95	\$
Crocker, Claude W., levelman	3,785.94	.50
Crosby, Lewis P., clerk	125.00	55.40
Crosland, A. D., laborer	1,976.17	.....
Crothers, Richard R., truck driver	547.06	.....
Crowell, Byron W., carpenter	2,732.53	.....
Culp Alva L., sign crew helper	2,169.06	828.40
Cummings, Carroll L., timekeeper	2,594.99	.....
Cummings, Clarence, laborer	620.00	.....
Cunningham, Robert, tractor operator	36.55	.....
Cunningham, T. C., laborer	1,931.91	.....
Curley, E. J., construction superintendent	2,862.90	.....
Curran, Dan, transitman	3,894.58	15.15
Currie, Mabel, secretary	3,014.64	69.75
Currier, Al D., section foreman helper	2,531.38	16.10
Currier, William W., section foreman	2,911.58	.....
Curry, James V., bridgeman	19.20	.....
Curtis, I. A., laborer	84.00	.....
Cutler, Oscar, assistant office engineer	6,263.36	861.05
Cutler, Robert M., section foreman	2,916.25	.....
Dade L. R., section foreman	2,877.19	2.00
Daimler, Cecil F., street foreman	3,133.70	.....
Dakin, Ivan, general foreman	4,264.14	77.90
Daley, LeRoy, office janitor	723.17	.....
Dalton, Walter L., tamperman	223.03	.....
Daniel, Carl S., chainman	2,817.56	1.95
Danielson, Evelyn, key punch operator	2,025.00	.....
Darby, Claude, designer	5,369.28	1.25
Darby, Wilbur M., division office engineer	4,578.56	.....
Dark, Stephen C., mechanic	2,551.86	3.00
Darrar, Carl, section foreman helper	2,446.15	.....
Davenport, Lloyd L., road magnet operator	2,311.06	1,774.60
Davidson, D. A., raker	2,126.13	.....
Davidson, Floyd L., rollerman	763.67	.....
Davidson, Frank, section foreman	2,810.10	5.00
Davidson, Howard W., shoveler	720.55	.....
Davidson, H. W., painter	2,489.25	.....
Davidson, L. C., mechanic	2,748.11	.....
Davidson, Paul, pitman	562.19	.....
Davidson, W. G., street foreman	3,043.75	15.95
Davies, Jerry M., flagman	315.00	.....
Davies, L. M., laboratory assistant	2,070.25	24.45
Davies, Paul E., clerk	3,470.20	.....
Davis, Duane D., bridge inspector	194.63	.....
Davis, Harrison H., foreman	3,111.34	.....
Davis, Joe M., jackhammer man	563.30	.....
Davis, J. W., truck driver	594.18	.....
Davis, William C., watchman	1,592.60	.....
Daywalt, W. S., laborer	14.00	.....
Dean, Avon J., chainman	2,370.00	.....
Dean, A. B., resident engineer	5,712.00	.....
Deardorff, Joe G., laborer	2,088.75	.....
De Armond, Robert R., truck driver	169.50	.....
De Bolt, Warren, truck driver	2,104.75	.....
Deckman, J. E., truck driver	1,311.95	14.20
De France, I. A., district maintenance superintendent	5,712.00	240.50
De Geeter, Peter, assistant carpenter	2,534.25	.....
Degermark, Harry V., flagman	231.28	.....
De Jooe, A. B., carpenter	2,614.30	.....
Delaney, S. E., chainman	2,400.00	.....

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Delco, Lew, laborer	\$1,510.30	\$
Delp, H. C., truck driver	1,765.22	110.60
Delp, S. C., working foreman	2,130.53	4.85
Delyria, George, motor grader operator	2,367.36	24.60
De Maris, Bert G., laborer	1,961.25	.....
Denham, Fred A., carpenter	2,451.95	.....
Dennis, Roy J., assistant carpenter	1,850.93	.....
Dennison, Jess J., section foreman	2,814.75	1.30
Denson, Walter, truck driver	2,178.30	.....
Denstedt, L. D., section foreman helper	2,474.56	.....
Denstedt, Walter R., truck driver	1,424.10	.....
Denton, E. C., truck driver	167.71	.....
De Sart, D. G., office assistant	4,036.16	9.25
De Souza, J. W., assistant attorney	7,286.62	678.25
De Souza, J. W., assistant attorney .....	.....	* 28.84
Deuber, P. G., plant inspector	1,115.11	1.70
Devers, J. M., attorney	11,064.00	908.48
Devers, J. M., attorney .....	.....	* 4.16
Devine, M. R., truck driver	1,069.96	.....
DeVore, Elvin, truck driver	2,318.45	24.95
Dewey, Lloyd, janitor	449.50	.....
Dey, Ross, truck driver	2,103.50	.....
Dick, Norman, section foreman helper	2,480.45	.....
Diedrich, F. T., laborer	202.00	.....
Diehl, Henry, truck driver	2,227.60	.....
Dietz, Ed, boilerman	690.57	.....
Dietz, Eugene J., mechanic	3,059.06	20.00
Dietz, George, stockman	2,740.96	.....
Dillabough, B. L., park caretaker	2,646.00	.....
Dillard, Henry, truck driver	325.30	.....
Dillard, L., truck driver	104.40	.....
Dilley, Ralph E., paintman	462.79	.....
Dillingham, Frank C., park caretaker	720.00	.....
Dimmick, Ralph C., raker	2,177.41	.....
Dimmick, C. J., truck driver	476.43	.....
Ditto, Glenn A., truck driver	2,131.70	2.00
Dixon, L. P., truck driver	1,848.79	.....
Dizney, Clarence L., carpenter	2,901.54	52.05
Doane, Chester, laborer	49.00	.....
Doane, S. W., assistant carpenter	2,580.08	2.80
Dobrkovsky, Fred, shoveler	1,418.85	.35
Doddridge, Phil, truck driver	445.57	.....
Dodge, Clarence, laborer	12.38	.....
Doerfler, Ernest H., sign crew helper	2,175.05	633.90
Dolan, Glenn O., draftsman	3,920.88	4.10
Domogalla, Guy H., watchman	1,312.59	.....
Domogalla, Vern, sign crew foreman	2,684.03	1,071.75
Don, James, draftsman	3,920.88	.....
Donaca, Charles, laborer	478.30	.....
Doney, Lincoln L., draftsman	2,885.09	.....
Donham, Walter P., junior draftsman	3,011.31	.....
Donnelly, Wilford A., truck driver	1,076.86	.....
Dorn, Arthur Z., foreman	3,302.04	.....
Dorn, Fred, motor grader operator	1,122.83	.....
Dorner, W. J., bridge inspector	3,239.04	2.40
Douglas, Vernon, retort operator	2,396.29	.....
Dow, L. N., transitman	4,570.20	140.85
Dowell, Gordon, truck driver	822.38	2.40
Dowling, A. A., laborer	503.70	.....

* Private car mileage.

LIST OF EMPLOYES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Downey, Harry L., head chainman	\$2,008.71	\$ 3.40
Downing, Grant P., section foreman helper	2,497.83	.....
Dresser, Marshall, resident bridge engineer	5,712.00	21.50
Duffield, Gordon H., laborer	843.43	.....
Duffy, Arthur, computer	3,891.20	.....
Dugan, B. E., park caretaker	1,602.58	.....
Dunavan, William F., laborer	2,034.98	.....
Duncan, Ted, motor grader operator	617.20	.....
Dunham, C. M., laborer	1,955.82	.....
Dunklee, A., laborer	924.30	.....
Dunmire, Roy E., truck driver	576.93	.....
Dunn, Charles W., painter	1,886.80	.....
Durant, George S., senior office assistant	2,804.32	70.20
Durant, George S., senior office assistant .....	.....	* 72.04
Dye, A. C., laborer	1,837.43	.....
Dyer, Cleo N., truck driver	1,231.08	.....
Earl, Walter, laborer	2,054.40	.....
Eason, F. D., division engineer	8,966.40	452.15
Eayrs, Jack T. mechanic	675.94	.....
Ebsen, A. L., laboratory assistant	1,750.00	.....
Eckholm, C. W., laborer	1,136.80	.....
Eddy, Carl G., section foreman	2,922.67	.....
Eddy, Harold E., kettlemán	1,016.83	.....
Eddy, Harry L., transit rodman	3,723.02	12.50
Eddy, Joe M., truck driver	1,842.92	.....
Edgerton, Roy C., computer	3,038.35	.....
Edwards, Alvin, grader operator	2,079.65	.....
Edwards, Frank, truck driver	2,193.48	.....
Edwards, Julian A., flushcoater	746.90	.....
Edwards, L. L., section foreman	2,937.04	.....
Edwards, Tom, resident bridge engineer	4,598.40	.....
Eggstaff, Ralph, computer	3,698.26	252.75
Eichler, Carl E., laborer	1,661.25	.....
Eksman, Gus C., material inspector	2,986.67	10.30
Elder, Marguerite, stenographer	2,410.00	.....
Elledge, T. J., man and team	393.30	.....
Elliott, Elbert W., laborer	1,975.40	.....
Elliott, E. W., man and team	667.30	.....
Elliott, Ray H., assistant carpenter	2,106.06	.....
Elliott, Seth, man and team	882.90	.....
Elspas, Chester A., materials inspector	2,129.30	2.45
Elwood, Kenneth C., laborer	176.83	.....
Ely, E. E., bridge operator	3,310.40	3.60
Ely, E. E., bridge operator .....	.....	* 52.19
Ely, Frances E., paintman	694.55	.....
Emery, James, section foreman helper	2,332.95	5.20
Emery, Wayne, man and four-horse team	845.00	.....
Emmerich, Frank J., working foreman	2,125.25	.....
England, I. B., section foreman	2,955.94	.....
Enneberg, Carl T., motor grader operator	2,383.57	1.85
Enos, P. R., truck driver	2,179.55	2.10
Epperly, Alfred K., kettlemán	880.13	.....
Epperly, Charles S., truck driver	1,899.56	20.10
Epperly, Guy E., truck driver	1,607.75	.....
Epperson, B. L., section foreman helper	2,484.55	.....
Epperson, Milton A., truck driver	1,715.51	.....
Erbe, Charles F., mechanic	3,095.66	.....
Ernest, Marion, laborer	14.00	.....
Erpelding, Magdaline, stenographer	2,219.75	.....

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Erskine, Henry, section foreman	\$2,961.30	\$
Erwin, H. G., truck driver	2,020.10	.....
Esch, Harry M., sign shop painter	1,078.83	.....
Esmay, John W., section foreman helper	2,482.60	6.25
Etzel, I. G., clerk	2,634.89	.....
Evans, Frank, laborer	1,858.47	7.10
Evans, John, laborer	505.83	.....
Evans, Leo E., flushcoater	887.97	.....
Evans, Robert E., truck driver	303.90	.....
Evans, T. E., truck driver	2,231.50	3.10
Evans, Willis E., laborer	1,467.83	.....
Evans, W. T., truck driver	2,041.92	.....
Everson, John E., electrical designer	3,684.72	121.90
Ewan, Elbert, section foreman helper	2,537.78	.....
Fair, F. H., section foreman helper	2,466.60	.....
Fairbanks, Homer, section foreman helper	2,422.95	.....
Falkenhagen, D., district maintenance officeman	3,470.40	7.10
Falleur, F. A., laborer	403.25	.....
Fanning, Floyd, motor grader operator	2,279.60	.....
Faris, Guy S., section foreman	2,848.20	.....
Farnam, L. B., mechanic	3,308.33	51.25
Farrar, F. W., draftsman	4,663.93	5.00
Farrar, F. W., draftsman .....	.....	* 5.44
Faust, Robert M., chainman	1,099.32	6.98
Fay, Earl C., section foreman	2,823.89	.....
Fendrich, Stanley, truck driver	242.85	.....
Ferebee, James B., laborer	1,399.85	.....
Ferguson, Clarence S., retort operator	2,880.89	.....
Ferguson, E. W., section foreman helper	701.70	.....
Ferguson, John C., laborer	2,007.20	.....
Ferguson, Lee R., section foreman	2,961.30	.....
Ferns, Victor, truck driver	2,108.73	2.45
Ferree, George J., section foreman	2,915.22	.....
Ferris, Roy S., senior office assistant	2,291.76	.....
Fetsch, Carl, truck driver	550.13	.....
Fields, Pryne, truck driver	1,960.40	.....
Finch, O. B., laborer	1,491.85	.....
Fine, R. F., laborer	280.66	.....
Finkbiner, N. M., engineer of materials	6,811.20	148.85
Finkbiner, N. M., engineer of materials .....	.....	* 1.04
Finley, Brent, materials inspector	1,960.29	2.90
Firkins, M. D., carpenter	2,708.95	.....
Fischer, Martin, welder	2,834.35	.....
Fisk, Howard W., sign crew helper	2,229.52	784.55
Fisk, O. E., section foreman	2,897.35	.....
Fitch, Wilford H., laborer	2,033.85	.....
Flanagan, C. E. bridge foreman	3,805.52	2.20
Flannagan, H. H., bridge operator	2,740.96	.....
Fleek, A. L., laborer	1,975.05	.....
Flesher, J. W., Jr., shoveler	1,111.19	.....
Fletcher, Agnes M., stenographer	1,840.44	.....
Fletcher, Arthur J., truck driver	2,210.65	.....
Floch, Robert, bridge foreman	2,914.52	7.00
Floer, Christian, watchman	1,712.19	13.15
Flory, Keith N., chainman	1,536.45	3.10
Flynn, Cecil L., rollerman	956.07	.....
Foe, F. G., flagman	376.69	.....
Foe, Kenneth D., leverman	862.05	.....
Follett, Lee, truck driver	1,826.65	.....

* Private car mileage.

LIST OF EMPLOYES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Folliett, Warren D., bridgeman	\$1,578.37	\$
Folston, James E., street inspector	3,714.00	5.35
Forbes, Frank A., section foreman helper	2,486.58	.....
Forbes, Guy, rollerman	435.46	.....
Ford, A. J., resident engineer	4,813.20	7.05
Ford, E. E., carpenter	1,228.50	.....
Ford, Jack R., laborer	90.03	.....
Forrest, Russell A., transitman	3,900.88	.....
Forty, B. V., section foreman	2,885.38	.....
Forty, J. L., materials inspector	2,400.00	4.50
Fossen, A. A., transitman	4,427.19	21.50
Foster, Walter S., truck driver	865.80	.....
Fowler, C. M., flagman	324.43	.....
Fox, Dee, section foreman	2,774.92	.....
Frack, William O., truck driver	2,144.20	.....
Fraley, V. R., chainman	2,404.61	.50
Francis, James, district maintenance officeman	3,470.40	.....
Franklin, L. W., transitman	4,585.13	83.30
Fransen, Olaf G., truck driver	1,036.68	.....
Frantz, Henry D., shoveler	281.81	.....
French, C. D., publicity writer	166.13	15.85
Frey, Frank C., Jr., section foreman	2,922.15	.....
Frink, Howard E., junior draftsman	3,044.59	.....
Froebe, Wayne, truck driver	1,230.43	.....
Frost, R. E., laborer	283.23	.....
Frum, C. H., chainman	2,400.00	.50
Fryer, Hyrtle F., laborer	270.35	.....
Fryer, Maynard M., laborer	487.48	.....
Fryer, Vivian, stenographer	1,394.00	.....
Fulp, Russell, motor grader operator	2,328.15	13.70
Furman, Roscoe R., truck driver	2,191.64	15.15
Furrow, R. A., resident engineer	5,964.00	13.35
Gabriel, L. W., assistant bridge operator	3,240.00	.....
Gagner, Euclid, flagman	270.62	.....
Gale, Henry E., materials inspector	2,859.35	175.09
Gale, Henry E., materials inspector .....	.....	* 180.08
Gall, Cecil C., resident engineer	5,712.00	.50
Gallacher, Alex, section foreman	2,845.04	.....
Gallagher, M. H., lineman	96.80	.....
Gallon, Arthur J., laborer	16.25	.....
Galloway, Dean G., truck driver	379.10	.....
Gann, Fred, truck driver	2,139.65	.....
Ganz, Phyllis, key punch operator	2,064.12	.....
Gardiner, C. L., right of way agent	4,598.40	941.45
Gardiner, Francis, tunnelman helper	84.00	.....
Gardner, C. A., designer	4,598.40	101.10
Gardner, E. A., laborer	128.50	.....
Garfield, C. E., section foreman	2,854.84	12.45
Garrison, Bryan, watchman	1,745.42	.....
Garwood, Edgar, laborer	230.00	.....
Gascon, Charles, laborer	350.35	.....
Gately, Joseph E., office assistant	1,393.55	.....
Gates, John M., office assistant	1,074.19	.....
Gayman, Stanley, boilerman	2,583.78	.....
Gearhard, Roy B., laborer	657.60	.....
Gentry, George H., blacksmith	2,576.70	12.00
Gentry, George V., bridgeman	2,015.00	.....
Gibbons, W. J., gate tender	2,243.62	.....
Gibson, Charles T., superintendent heating and plumbing	219.00	.....

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Gibson, W. M., street foreman	\$2,949.64	\$
Gies, Carl Parker, chainman	1,526.67	1.00
Giesy, Grover C., Sr., flagman	1,130.21	.....
Giesy, G. C., Jr., shoveler	891.26	.....
Gifford, Ralph, photographer	3,423.06	344.20
Gilbert, R. D., shop clerk	2,740.96	.....
Gilkey, Richard W., truck driver	114.60	.....
Gilkison, R. E., bridgeman	165.60	.....
Gill, Don, bridgeman	1,671.50	.....
Gill, Virgil L., section foreman	2,918.22	.....
Gilliam, D. D., carpenter	2,729.16	1.55
Gilliland, G. R., laborer	285.25	.....
Gillette, Ralph M., section foreman	2,316.88	.....
Gillette, S. B., assistant purchasing agent	6,638.38	.....
Gilliland, Jesse W., truck driver	2,136.45	.....
Gillmore, Clyde C., section foreman	3,016.67	.....
Ginn, John E., truck driver	1,367.60	.....
Gisholt, Harry, jackhammer man	1,524.33	.....
Giskaas, George, laborer	113.00	.....
Givan, Ruth, clerk	2,550.00	.....
Glaisyer, H. B., commission secretary	7,186.20	298.95
Glaisyer, H. B., commission secretary .....	.....	* 4.08
Glascock, Harold, laborer	647.53	53.30
Glascock, Marvin, mechanic	2,982.56	86.20
Glines, L. L., laborer	61.50	.....
Glynn, A. E. laborer	96.50	.....
Godsey, Chester I., motor grader operator	2,361.15	.....
Goe, Gerald, truck driver	1,344.20	.....
Gohl, Edward A., section foreman	2,794.76	.....
Goldhammer, Earl L., senior office assistant	1,580.55	1.25
Good, Donald L., shoveler	622.69	.....
Goodell, Vernon, flagman	207.36	.....
Goodnight, V. L., district maintenance superintendent	5,712.00	328.40
Goodwin, C. W., park foreman	2,410.00	.....
Gordon, C. W., bridgeman	2,449.48	.....
Gordon, Frank J., laborer	1,865.20	.....
Gotcher, Glenn, rollerman	127.51	.....
Gould, George, section foreman helper	2,429.95	.....
Gould, Robert B., resident engineer	5,712.00	116.30
Gourley, R. H., truck driver	33.55	.....
Grabenhorst, W. C., truck driver	472.86	.....
Graham, Howard V., watchman	1,640.22	.....
Graham, John, laborer	128.16	.....
Graham, John H., bridge operator	2,592.14	.....
Graham, Leon F., laborer	553.69	.....
Gramse, A., grader operator	2,259.40	.....
Gramse, Fred M., section foreman helper	2,671.47	.....
Grant, F. E., laborer	2,077.05	.....
Grasier, Frederick A., computer	3,216.90	.....
Graue, Vincent E., stakeman	2,332.26	38.20
Graven, Elmer W., truck driver	2,142.90	.....
Gray, H. E., laborer	2,323.48	.....
Gray, Robert, section foreman helper	1,863.64	3.85
Greb, Alvin P., laborer	856.70	.....
Green, Arthur N., timekeeper	1,848.48	29.50
Green, C. W., officeman	3,530.24	.....
Green, George, laborer	211.40	.....
Green, Robert G., truck driver	592.70	.....
Green, Thad A., draftsman	3,920.88	.....
Greene, Walter N., section foreman	2,935.59	3.45

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Gregg, Lloyd B., payroll clerk	\$3,690.18	\$
Greiner, John C., chainman	2,345.97	11.80
Grenfell, William S., radio operator	3,149.62	178.65
Gress, Lee A., office assistant	926.67	.....
Griffin, Robert, truck driver	2,006.10	.....
Grow, Hugh, laborer	1,789.35	.....
Grubbe, Nelson, truck driver	1,586.02	17.25
Gruchow, Grant, mechanic	2,966.33	65.60
Gruetter, James G., senior office assistant	1,054.65	.....
Gruis, Donald E., laborer	269.10	.....
Gruis, Ed, laborer	376.30	.....
Grunning, Fred M., laborer	214.35	.....
Guilbert, Frank F., bridgeman	1,320.00	.....
Gunter, Henry E., laborer	1,251.50	.....
Gwillim, O. C., assistant carpenter	2,399.90	.....
Hack, Raymond L., truck driver	488.40	.....
Hackett, H. N., personnel engineer	5,306.96	.....
Hackett, Mell M., supervising mechanic	1,678.50	21.85
Haek, Jack J., apprentice raker	346.25	.....
Haft, Ray, laborer	1,031.65	.....
Haga, Lester, section foreman helper	1,888.15	.....
Hagemann, Charles F., laboratory chief clerk	3,610.40	.....
Hagemann, Frederick J., senior office assistant	2,244.62	.....
Hagemann, French T., laboratory assistant	3,470.40	15.20
Hagen, Arthur, truck driver	1,889.09	.....
Hagen, Otto, laborer	1,191.20	.....
Haggblom, C. G., laborer	1,991.40	.....
Haines, Cecil S., plant foreman	1,835.84	.....
Haines, J. O., man and team	223.20	.....
Hale, J. Irving, sign shop painter	1,633.22	.....
Halik, E. F., master mechanic	6,910.20	28.40
Hall, Andrew A., painter	2,373.90	.....
Hall, Frank L., draftsman	3,839.59	58.08
Hall, Loyd E., truck driver	2,124.25	.....
Hall, M. C., section foreman helper	2,540.15	.....
Hall, R. J., mechanic	3,176.57	27.15
Hall, W. R., rollerman	2,169.07	6.70
Halladay, George M., truck driver	2,019.45	5.00
Ham, J. Dale, shoveler	607.26	.....
Hamar, Ronald, chainman	2,212.05	.....
Hamilton, Hollis H., section foreman helper	2,447.97	.....
Hamilton, J. F., laborer	864.50	.....
Hammock, Jonas A., truck driver	1,231.02	30.00
Handley, Kenneth, laborer	437.95	.....
Hannum, Arthur L., tamperman	208.79	.....
Hannum, Willard F., raker	1,378.07	.....
Hansen, Everett A., chainman	1,018.05	50
Hansen, Ted, flagman	992.70	.....
Hanson, Roy, tractor operator	542.90	.....
Hanzen, William E., materials inspector	1,917.64	9.40
Harbick, L. J., laborer	406.25	.....
Hardecastle, Donald E., chainman	2,364.52	6.25
Hardie, James A., office assistant	4,598.40	.....
Harkey, C. V., truck driver	1,532.50	.....
Harless, L. E., chainman	3,209.37	4.00
Harlow, Price E., mechanic	2,528.26	9.70
Harnish, Raymond B., section foreman helper	2,587.93	.....
Harnsberger, Edw., carpenter, working foreman	3,025.16	.....
Harnsberger, John, blacksmith, working foreman	3,081.18	.....
Harnsberger, W. E., mechanic	2,936.86	4.30

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Harpole, Ray A., pilot car driver	\$ 740.34	\$
Harpst, Chester W., truck driver	2,158.48	.....
Harra, G. W., assistant engineer of materials	4,948.40	46.60
Harrell, Sam T., truck driver	1,809.60	8.25
Harrington, Charles J., truck driver	680.08	.....
Harris, Keith M., shovel operator	3,053.51	19.80
Harris, M. W., rollerman	2,194.77	.....
Harris, O. E., watchman	2,508.88	.....
Harris, Ray, truck driver	2,057.51	.....
Harrison, Andrew G., truck driver	1,814.15	.....
Harrison, Twila V., typist	1,393.87	.....
Hartman, E. P., computer	3,818.72	.....
Hartrampf, Ross, computer	3,234.45	.....
Hartung, Leslie E., laborer	284.84	.....
Harwood, C. A., rollerman	728.76	.....
Harwood, Dale, laborer	82.50	.....
Haselwander, Henry M., laborer	2,031.20	.....
Haskell, C. M., truck driver	2,146.41	.....
Haskins, Ed L., apprentice raker	2,184.31	13.65
Hastay, Millard W., senior office assistant	1,060.00	.....
Hathaway, Ella C., clerk	2,759.96	.....
Hathaway, Jess D., carpenter	2,782.97	20.65
Hathaway, J. O., flagman	102.50	.....
Hathaway, Leonard G., painter	2,442.10	.....
Hathorn, W. H., transitman	3,843.59	61.20
Hawk, Leslie, grader operator	1,902.62	3.05
Hawkins, Charles H., truck driver	1,628.08	.....
Hawkins, J. W., lineman	191.95	.....
Hay, Lee, laborer	2,026.65	3.70
Hayden, C. O., section foreman	2,949.33	.....
Hayes, Floyd, truck driver	2,096.65	.....
Hayes, Ray, laborer	1,506.90	.....
Haynes, Arthur L., bridgeman	1,387.50	.....
Haynes, C. D., resident engineer	4,813.20	4.30
Haynes, Richard B., office assistant	1,724.71	139.75
Haynie, Clive C., assistant bridge foreman	2,618.50	.....
Hays, Vernon R., truck driver	2,200.67	.....
Hayse, Joe S., miner's helper	624.80	.....
Hazelton, Charles E., laborer	2,012.90	.....
Head, Cecil W., office assistant	2,310.00	.....
Head, J. Al, traffic survey supervisor	3,920.88	149.50
Heath, Robert H., laborer	1,666.60	.....
Heckinger, Ray L., raker	2,027.59	.....
Hector, Wally M., head chainman	2,724.06	.....
Hedrick, Charles D., street foreman	3,398.65	4.95
Heidel, Carl A., timekeeper	2,677.73	3.25
Heim, H. Verner, office assistant	1,053.33	.....
Heitshu, Alan, laborer	214.00	.....
Heizer, Leonard M., truck driver	441.18	.....
Helm, Robert, truck driver	86.15	.....
Henderson, Carl E., paintman	939.31	.....
Henderson, Merrill C., computer	3,797.65	.....
Henderson, Orville E., laborer	2,022.50	.....
Henley, B. F., pitman	346.75	.....
Herberger, W. J., truck driver	179.68	.....
Herbert, Janet V., stenographer	2,025.38	.....
Herbert, L. A., tunnelman's helper	532.65	.....
Herder, Ellsworth E., laborer	1,217.10	.....
Hermens, Adrian P., truck driver	262.20	.....
Hershberger, Louis B., assistant timekeeper	185.48	.....

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Hervey, Thomas E., laborer	\$1,786.55	\$
Hess, Alvin E., blacksmith helper	1,585.25	.....
Hess, John O., computer	3,805.40	1.50
Hester, George C., office assistant	3,427.27	43.40
Hetrick, Hollis I., computer	3,800.88	25.50
Heuperman, L. F., engineering draftsman	4,370.88	.....
Heusser, Karl, park caretaker	1,690.00	.....
Hewitt, M. C., head lineman	1,801.60	.....
Hewitt, W. H., grader operator	2,118.40	.....
Hiatt, J. C., topographer	3,800.88	16.35
Hiatt, William A., section foreman	2,772.04	8.90
Hickok, V. V., pilot car driver	347.96	.....
Hicks, Henry, laborer	1,165.00	.....
Higgins, Homer, bridgeman	1,786.48	.....
Higgins, Raymond A., sign shop painter	1,179.11	.....
Hilderbrandt, Elmer, laborer	398.85	.....
Hilderbrandt, Werner, truck driver	1,760.05	.85
Hill, Glenn, section foreman helper	2,495.20	.....
Hiller, Frank C., truck driver	523.64	.....
Hilyard, W. S., grader operator	2,136.83	.....
Hinges, Karl E., office manager planning survey	4,036.16	2.30
Hinkle, Twig, truck driver	2,298.68	.....
Hinz, E. A., chief clerk	3,690.24	.....
Hisel, Walter B., watchman	1,211.98	.....
Hoagland, L. L., laborer	1,394.95	.....
Hoard, Norman B., chainman	2,400.00	.50
Hoch, Russell, section foreman helper	2,481.13	.....
Hockett, L. C., watchman and janitor	2,508.88	.....
Hockman, John D., lineman	1,842.84	.....
Hodge, W. S., district maintenance superintendent	5,712.00	267.85
Hodgen, O., laborer	1,833.90	.....
Hodges, J. P., general foreman	3,998.95	.....
Hodgins, W. H., man and team	952.50	.....
Hoeger, E. A., carpenter	2,518.68	.....
Hoebet, Gilbert, paint machine operator	1,847.54	.....
Hoebet, Paul, lineman	652.03	.....
Hoebet, William C., sign crew helper	686.62	.....
Hofer, Charles E., laborer	204.33	.....
Hoffman, Henry W., kettleman	677.26	.....
Hoflich, Virgil S., truck driver	2,363.85	.....
Hogg, J. F., man and four-horse team	929.35	.....
Hogg, Virgil E., laborer	914.55	.....
Holcomb, C. A., motor grader operator	2,350.86	10.05
Hollamon, Floyd M., laborer	1,875.20	.....
Holland, Edward J., truck driver	1,983.35	2.35
Holland, W. H., section foreman	2,789.20	.....
Hollenberg, R. V., bookkeeper and traffic manager	4,598.40	.....
Holman, Arthur W., flushcoater	1,230.19	.....
Holman, Jack H., boilerman	1,639.25	.....
Holmes, C. J., truck driver	2,042.21	.....
Holmes, Frank D., truck driver	2,121.18	.....
Holmes, John W., assistant real property officeman	2,787.87	.....
Holmes, W. O., mechanic	3,049.98	3.85
Holst, Herbert, truck driver	694.20	.....
Holteen, Claude A., truck driver	250.80	.....
Hoover, C. T., costkeeper	4,036.16	.....
Hoppe, Lawrence A., laborer	149.31	.....
Hoppe, Otto E., plant foreman	2,589.18	1.00
Hopper, Roland, blacksmith helper	1,757.31	.....
Horning, Harry, section foreman helper	2,563.97	.....

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Horning, Robert J., truck driver	\$1,672.17	\$
Horton, Otto P., section foreman	2,947.75	.....
Hossman, Frank J., carpenter	2,843.08	.....
Hostetler, Fred, laborer	604.83	.....
Hounshell, R. L., laborer	1,027.53	.....
Householder, George D., section foreman helper	2,539.01	.....
Houston, H. B., truck driver	140.80	.....
Houston, Paul W., draftsman	3,920.88	.....
Howard, Charles A., sign crew foreman	2,408.39	492.15
Howard, Donald, flagman	463.15	.....
Howard, W. R., laboratory technician	4,036.16	.....
Howard, W. W., laborer	1,092.90	.....
Howe, Robert G., laborer	232.67	.....
Howell, Paul W., chainman	2,049.57	3.00
Howell, William F., laborer	885.10	.....
Howry, A. J., laborer	307.00	.....
Howry, John, section foreman	2,799.63	.....
Hoxie, Harry E., truck driver	1,050.22	.....
Hoxie, J. E., watchman	1,337.13	.....
Hoxie, J. L., truck driver	1,346.41	.....
Hoxie, Oscar, foreman	3,340.20	.....
Hubbard, C. K., resident bridge engineer	4,146.79	.....
Hudson, Albert L., bridgeman	908.10	.....
Huffman, F. M., assistant timekeeper	1,969.57	6.60
Hug, Robert M., pilot car driver	206.05	.....
Huggins, Bernice E., key punch operator	1,430.00	.....
Hughes, Charles H., street inspector	2,979.31	4.30
Hughes, Max D., sign shop painter	806.58	.....
Hughes, Nick, laborer	1,011.20	.....
Hughlett, H. W., bridge foreman	3,805.52	3.00
Hugo, Frank, mechanic	3,123.93	4.45
Hull, Frederic J., relief bridge operator	2,531.62	.....
Hunt, Roy W., truck driver	283.23	.....
Hunter, Waldo C., motor grader operator	1,762.85	.....
Huntington, Chester N., truck driver	716.55	.....
Huntley, Philip, bridgeman	2,384.48	.....
Hunzicker, O., laborer	1,429.35	1.75
Hushbeck, Ray, motor grader operator	1,104.10	2.90
Hussey, Fred J., section foreman	2,943.34	.....
Husted, Glen W., laborer	911.75	.....
Hutchcroft, Hubert, laborer	139.35	.....
Hutchings, M. A., head lineman	1,621.78	.....
Hutchinson, Frank G., artist-draftsman	4,973.40	82.50
Hutchinson, Frank G., artist-draftsman .....	.....	*260.44
Hyde, Earl E., traffic line foreman	3,352.97	.....
Hyvari, Oscar, section foreman helper	2,189.98	.....
Iler, Fritz C., motor grader operator	2,010.00	.....
Iliff, D. O., laborer	91.10	.....
Ingerson, James C., assistant carpenter	2,514.00	.....
Ingrey, Helen, secretary	3,410.90	.....
Inman, W. S., section foreman	2,854.90	.....
Ireland, Loren E., office assistant	943.92	.....
Ireland, W. O., flagman	248.00	.....
Isaacson, Jack M., laborer	109.73	.....
Isham, John M., district maintenance officeman	3,389.04	5.10
Ismert, R. H., carpenter	2,520.94	.....
Jack, Raymond E., section foreman helper	2,423.10	.....
Jackson, Chester, bridgeman	1,530.30	.....
Jackson, Donald V., truck driver	276.30	.....
Jackson, J. S., laborer	601.45	.....

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Jacobs, Charles, laborer	\$ 993.88	\$
Jacobs, W. G., bridgeman	91.20	.....
Jacobson, Carl C., truck driver	1,883.70	2.00
Jackson, F. B., truck driver	404.30	.....
Jaeger, Nick, laborer	1,878.83	.....
Jaggers, Daniel C., bridgeman	1,788.25	3.00
Jahns, R. V., truck driver	1,392.58	30.40
Jamerson, W. T., truck driver	1,752.18	4.20
James, A. C., laborer	209.33	.....
James, Robert L., lineman	1,381.15	.....
James, W. H., section foreman	2,869.09	4.05
James, M. A., laborer	249.00	.....
Janz, Arthur E., timekeeper	2,983.57	17.36
Janz, Arthur E., timekeeper .....	.....	*89.24
Jaqua, Claren E., senior office assistant	2,761.22	16.30
Jayes, John, shop superintendent	4,166.16	.....
Jayes, W. S., shop superintendent	4,166.16	.....
Jeli, George J., plant foreman	1,909.29	.....
Jennings, Fred G., truck driver	2,216.50	.....
Jensen, Ed, shovel operator	3,974.80	.....
Jensen, L. L., resident bridge engineer	5,156.96	.....
Jensen, Otis V., landscape inspector	2,984.83	52.50
Jesse, William H., truck driver	2,244.30	.....
Johns, Dewey, laborer	614.05	.....
Johnson, Albert, laborer	274.80	.....
Johnson, A. E., bridge inspector	4,036.16	.....
Johnson, A. G., transitman	4,783.87	26.30
Johnson, A. M., tabulating machine operator	3,620.40	.....
Johnson, B. O., resident engineer	5,712.00	4.95
Johnson, B. O., resident engineer .....	.....	*5.12
Johnson, Clifford E., blacksmith	2,639.10	.....
Johnson, Clyde E., laborer	1,537.31	.....
Johnson, Curtis H., draftsman	3,354.72	.....
Johnson, C. E., rollerman	1,027.52	.....
Johnson, Dorothy E., statistician	2,077.02	.....
Johnson, Ed D., lineman	580.70	.....
Johnson, Edwin C., timekeeper	1,150.28	.....
Johnson, E., section foreman	2,853.68	8.95
Johnson, E. B., blacksmith foreman	3,146.45	.....
Johnson, George, section foreman	2,934.52	.....
Johnson, G. W., lineman	550.55	.....
Johnson, Jean, stenographer	2,070.00	.....
Johnson, Jess J., chainman and computer	2,007.10	.....
Johnson, Joe L., bridgeman	2,389.85	.....
Johnson, John, tunnelman's helper	602.00	.....
Johnson, J. P., laborer	15.00	.....
Johnson, Lloyd C., transitman	3,827.65	9.65
Johnson, Martin, tunnelman	524.00	.....
Johnson, Ray T., topographer	3,800.88	54.30
Johnson, Roy, truck driver	1,911.60	.....
Johnson, Roy M., laborer	126.30	.....
Johnson, William, section foreman helper	2,503.43	.....
Johnston, E. E., transitman	4,810.99	.....
Johnston, Lowell A., transitman	5,034.63	.....
Jolly, William, laborer	2,078.75	.....
Jolley, Merle J., truck driver	299.98	.....
Jones, C. R., section foreman helper	3,348.66	.....
Jones, E. Clare, sign crew helper	2,790.00	968.50
Jones, G. M., section foreman helper	2,518.26	4.80
Jones, Gilbert E., draftsman	3,920.88	2.50

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Jones, J. O., caretaker	\$ 540.00	\$
Jones, J. T., laborer	67.00	.....
Jones, N. H., shop superintendent	4,166.16	.....
Jones, Ollie C., section foreman	2,886.03	4.95
Jones, S. Paul, transitman	4,333.08	352.10
Jones, V. R., assistant cost analyst	3,496.07	391.20
Jones, William, boilerman	145.33	.....
Jordan, C. A., resident bridge engineer	5,712.00	8.05
Jordan, D. W., laborer	192.51	.....
Jorgenson, Jorgen T., miner's helper	241.20	.....
Judy, J. E., laborer	1,505.70	.....
Jullum, Henry, assistant cost analyst	3,570.40	689.30
Jullum, Henry, assistant cost analyst .....	.....	*5.52
Jungers, Howard F., kettleman	1,423.41	.....
Junkin, Con, working foreman	2,305.59	.....
Juntunen, Jack S., laborer	1,500.18	.....
Justen, Norman W., laborer	1,463.30	.....
Justice, Howard, laborer	956.25	2.45
Juve, Maurice N., transitman	3,920.88	.....
Kahler, Arnold J., apprentice raker	892.74	.....
Kamph, Frank E., watchman	2,544.75	.....
Karns, Ira, traveling motor grader operator	2,534.25	32.35
Kaufer, Oscar, right of way agent	100.00	.....
Kaufman, Glen F., laborer	321.34	.....
Kayser, George, timekeeper	2,336.19	23.55
Kayser, Henry, mechanic	2,966.02	41.40
Keef, Dennis W., assistant manager financial survey	3,781.13	183.15
Keef, Dennis W., assistant manager financial survey .....	.....	*40.00
Keith, A. H., truck driver	1,115.33	.....
Keith, Cecil E., draftsman	3,920.88	30.60
Kelley, Edgar H., laborer	2,314.14	.....
Kellogg, Robert F., chainman	823.33	3.35
Kelly, Gerald E., rollerman	548.61	.....
Kelsh, Lawrence J., senior office assistant	1,277.55	.....
Kempfer, William H., laborer	240.13	.....
Kennedy, N., mechanic	2,709.95	.....
Kennedy, Roy, laborer	120.00	.....
Kennen, Gilbert J., material checker	3,088.94	.....
Kennon, O. Roy, bridge inspector	4,379.06	2.45
Kent, Rudyard E., bridgeman	1,584.80	.....
Kerber, Leo, general foreman	3,778.37	7.55
Kerber, Louis R., general foreman	4,092.18	4.10
Kergil, William, laborer	430.01	2.60
Keys, Arthur H., truck driver	1,668.70	4.00
Kight, Cecil, truck driver	2,069.55	.....
Kilger, Leo A., junior draftsman	2,356.68	.....
Killin, Amil J., mechanic	2,988.60	.....
Kirby, R. B., flagman	788.80	.....
Kirby, W. K., tender driver	2,826.46	180.30
Kirk, Ray, laborer	289.75	.....
Kirk, Russell F., truck driver	1,859.30	.....
Kirk, Walter E., truck driver	1,665.33	.....
Kirkham, Leo E., section foreman	2,823.85	.....
Kirkwood, Albert A., locating engineer	5,712.00	3.80
Kirkwood, Robert B., material checker	610.54	10.30
Kistner, K. L., foreman	3,470.40	.....
Kite, K. W., laborer	2,041.70	.....
Kivett, C. L., truck driver	2,101.35	4.50
Klein, Kenneth, automotive economist	4,039.85	81.25
Klein, Kenneth, automotive economist .....	.....	*38.88

° Private car mileage.

LIST OF EMPLOYES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Klemsen, George, section foreman	\$2,897.83	\$
Kline, Robert, motor grader operator	2,249.30	2.60
Klineman, L. S., laborer	914.75	.....
Klitz, Noel, mechanic	3,340.58	76.20
Klonus, George A., raker	494.51	.....
Klug, Warren M., truck driver	466.13	.....
Kneass, A. B., real property officeman	5,157.06	4.75
Knigge, Marion P., laborer	7.00	.....
Knox, Cecile, stenographer	2,091.61	.....
Knupp, C. L., laborer	20.00	.....
Knutson, Knut, truck driver	487.42	.....
Koch, Lawrence, truck driver	2,137.90	.....
Koerner, Ralph, head lineman	1,944.68	.....
Kofoid, Orville, draftsman	3,834.59	5.90
Kondraski, Don, truck driver	2,104.95	.....
Koons, L. V., district maintenance superintendent	5,712.00	325.60
Kovach, George, laborer	1,684.63	.....
Kramer, Ernest, laborer	269.50	.....
Kramer, Herbert P., rollerman	1,073.21	3.75
Kramer, Joseph F., mechanic	1,997.88	.....
Krebs, Dorothy, secretary	2,195.16	.....
Krebs, Harold F., truck driver	1,022.77	.....
Kreger, Fred, laborer	1,211.65	.....
Kreger, Paul, truck driver	1,018.60	.....
Krieger, W. P., truck driver	1,285.92	.....
Kron, E. V., paint machine operator	1,920.27	.....
Krueger, W. G., general bridge superintendent	4,687.76	222.50
Kruse, George, motor grader operator	1,281.25	.....
Kudna, Albert, laborer	150.90	.....
Kudrna, Don, motor grader operator	738.54	.....
Kuipers, Lawrence F., paintman	804.63	.....
Kuipers, Ted, shoveler	519.28	.....
Kuiper, Bill, truck driver	2,133.31	15.20
Kvavle, Carl, laborer	1,466.00	.....
Laam, H. V., truck driver	2,224.20	.....
Labough, Jack W., truck driver	471.76	3.15
La Du, George, truck driver	2,017.38	.....
La Flamme, Millard, laborer	109.50	.....
La Grand, C. G., section foreman helper	2,569.45	.....
Lahey, E. H., motor grader operator	2,276.40	11.50
Lahey, Lewis F., truck driver	238.20	.....
Laman, A. V., laborer	1,789.00	.....
Lancaster, S. C., park caretaker	1,920.00	.....
Lane, B. F., mechanic helper	1,488.79	55.15
Lane, Clyde A., truck driver	1,967.35	.....
Lane, Leaman, truck driver	670.74	.....
Larson, Oscar, grader operator	438.30	.....
Larson, T. W., grader operator	2,504.38	.....
Lasater, Guy L., section foreman helper	512.85	.....
Lathim, K. B., district maintenance office clerk	3,470.40	7.05
Lathim, K. B., district maintenance office clerk .....	.....	*2.90
Lau, Earl C., laborer	217.75	.....
Laughlin, C. M., truck driver	1,955.76	.....
Laughlin, Kevin, timekeeper	3,097.80	25.35
Laughlin, Marshall E., section foreman	2,531.00	.....
Lauri, Carl C., laborer	1,622.55	.....
Law, Robert B., truck driver	749.79	.....
Lawe, Reynold J., laborer	300.04	.....
Laws, W. P., section foreman	2,929.49	.....
Lawton, R. R., truck driver	2,084.70	2.95

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Layton, Harold D., boilerman	\$1,271.40	\$
Layton, Theodore, watchman	1,008.98	.....
Leach, C. D., watchman	115.00	.....
Leach, Sanford, laborer	60.00	.....
Leach, Warren R., section foreman helper	2,453.55	7.15
Le Blanc, A. L., traffic line foreman	2,855.81	.....
Lee, Seth, sign shop painter	1,363.45	.....
Leffler, Arthur O., truck driver	2,018.74	.....
Le Gier, Lester B., section foreman helper	2,619.94	.....
Le Gore, Harry L., laborer	513.50	.....
Lehman, Bill, sign crew helper	1,284.79	421.00
Lehman, Hal W., sign shop painter	1,935.20	.....
Leighy, Joy F., section foreman	2,795.80	4.00
Leisher, L. H., truck driver	1,226.25	.....
Lenz, Clifford H., plant foreman	2,033.72	8.55
Leonard, J. Wesley, section foreman helper	2,445.70	.....
Lester, William M., assistant carpenter	2,511.85	.....
Levenhagen, John, laborer	1,602.48	.....
Levine, Oscar, gate tender	2,230.00	.....
Lewis, Cloyd, section foreman helper	1,857.85	.....
Lewis, Earl L., laborer	718.65	.....
Lewis, Howard E., bridgeman	1,466.00	.....
Lewis, H. H., laborer	686.25	.....
Lewis, J. D., laborer	480.35	.....
Lewis, Marie B., stenographer	2,550.00	.....
Lewis, Paul A., chairman	1,509.68	1.00
Libby, H. W., chief locating engineer	6,811.20	567.00
Lind, John, truck driver	2,107.17	.....
Lindeblom, M. A., designer	4,036.16	.....
Lindsey, Floyd, mechanic	1,136.80	.....
Lindsley, Bruce E., laborer	822.75	.....
Lippert, H. H., laborer	167.00	.....
Lithgow, Wayne W., section foreman	2,882.39	39.15
Litzenberger, Walter R., mechanic	1,248.40	5.25
Lizer, J. W., truck driver	218.40	.....
Lockwood, Harold, lineman	56.10	.....
Lockyear, W. L., assistant bridge foreman	3,159.04	.....
Long, C. C., building foreman	3,720.24	.....
Long, Willard W., section foreman	2,542.36	.....
Loter, Kenneth F., watchman	1,815.17	.....
Louy, Ralph, laborer	727.10	.....
Lovell, J. A., laborer	2,009.00	.....
Low, Charles E., office engineer	5,483.52	4.15
Lower, Linden L., truck driver	1,188.08	.....
Lowery, V. T., chairman	2,741.97	.40
Lowther, J. A., flagman	554.14	.....
Lucas, Caroline, clerk	2,305.51	.....
Lucas, Forest F., laborer	225.80	.....
Lucas, Oscar C., motor grader operator	512.75	.....
Lucas, P. A., material inspector	2,400.00	2.35
Lucey, Raymond, truck driver	672.26	.....
Luckett, Harry W., laborer	1,770.45	5.80
Lund, Donald, motor grader operator	1,196.45	.....
Lund, Martin, laborer	1,999.20	.50
Lutz, L. O., section foreman	2,812.52	.90
Lyda, H. C., carpenter	2,762.41	2.70
Lyons, Lester A., bridgeman	2,284.78	.....
Lyons, Ralph V., motor grader operator	2,316.00	4.10
Lytle, K. D., division engineer	8,966.40	1,005.45
Mac Donald, Arch B., material inspector	1,469.73	.....

LIST OF EMPLOYES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Mackenzie, Kenneth V., laboratory assistant	\$2,745.33	\$
Macomber, C. A., section foreman helper	2,166.86	.....
Macomber, Nate, section foreman helper	2,539.85	.....
Madden, A. J., laborer	1,293.39	.....
Magner, John D., park foreman	2,257.50	.....
Mahan, Claude, transitman	3,710.40	.....
Mahany, Orra L., typist	900.00	.....
Main, L. S., section foreman helper	2,461.50	.....
Maison, C. H., accountant	3,470.40	.....
Mangis, Maurice W., truck driver	423.16	.....
Mann, B. M., timekeeper	2,349.67	.....
Mann, H. S., chairman	2,503.23	.....
Mann, Marion S., laborer	132.00	.....
Manning, Cecil L., district maintenance officeman	3,403.44	16.15
Manning, C. W., bridge foreman	3,805.52	.....
Manning, Don, acting manager traffic survey	4,036.16	604.95
Manning, Kenneth W., laborer	122.00	.....
Marchbank, F. B., assistant bridge operator	3,240.00	.....
Marcott, Louie, flagman	79.00	.....
Marcott, Lynn, flagman	992.72	.....
Marketta, Frank M., laborer	1,076.40	*9.00
Marlton, Robert J., raker	1,585.21	.....
Marquis, Claude W., general foreman	3,674.41	29.90
Marquiss, Arthur W., street foreman	1,731.50	.....
Mars, L. D., resident engineer	5,156.96	.....
Marshall, C. O., laborer	994.10	.....
Marshall, Glen W., laborer	89.00	.....
Martin, B. A., locating engineer	5,712.00	26.30
Martin, B. A., locating engineer .....	.....	*2.56
Martin, Fred, truck driver	1,737.70	.....
Martin, George L., burnerman	817.73	.....
Martin, H., section foreman helper	1,371.50	4.80
Martin, John E., section foreman helper	2,430.41	.....
Martin, O. L., flagman	1,034.87	.....
Martin, W. O., raker	1,624.24	.....
Martinak, Joe E., motor grader operator	2,332.60	.....
Martinak, J. G., section foreman	2,682.62	.....
Mascall, C. C., section foreman helper	2,365.55	.....
Mason, Draper C., computer	3,369.00	234.50
Mathews, Keith W., leverman	722.15	.....
Mathews, V. F., truck driver	113.35	.....
Mathews, Walter W., truck driver	2,268.98	.....
Mattingly, A. L., laborer	1,936.50	.....
Mauck, A. G., chairman	3,173.63	.....
Mauer, Mike J., laborer	512.25	.....
Mayer, Clarence M., section foreman helper	2,628.26	.....
Maynard, C. O., traffic line foreman	3,470.40	.....
Mays, Raymond P., office assistant	1,854.20	179.45
Mays, Raymond P., office assistant .....	.....	*210.00
McArthur, J. D., motor grader operator	2,409.65	11.90
McAtee, Robert L., laborer	1,186.75	.....
McBain, Russell R., laborer	1,230.00	.....
McBride, John L., truck driver	329.40	.....
McCafferty, Jack, lineman	779.63	.....
McCallister, J. W., engineering draftsman	4,927.76	4.50
McCallister, M. D., right of way agent	4,598.40	915.80
McCann, E. W., chairman	3,167.17	.....
McCann, Lester, working foreman	2,533.20	.....
McCarty, Louis D., shovel operator	543.00	.....

* Private car mileage.

LIST OF EMPLOYES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
McCarty, Elbert, grader operator	\$1,972.35	\$
McChesney, W. S., right of way agent	3,624.24	488.85
McClain, H. E., section foreman	3,011.63	.....
McClary, Charlotte, stenographer	2,265.00	.....
McClay, Taylor, truck driver	2,150.02	6.65
McCluer, D. F., laborer	1,910.08	.....
McClure, Walter R., truck driver	302.35	.....
McCollum, J. W., section foreman	1,860.38	.40
McComb, Oliver, material inspector	2,331.82	.....
McConachy, Lawrence J., laborer	310.00	.....
McCord, Blaine, Jr., truck driver	545.88	.....
McCown, E. R., laborer	175.75	.....
McCullough, C. B., assistant state highway engineer	8,183.00	381.25
McCumsey, H. L., laborer	1,685.05	2.00
McCutcheon, Charles, section foreman	2,844.93	.....
McDonald, R. H., laborer	2,188.22	.....
McElfresh, Frank E., laborer	1,764.35	.....
McElvain, E. L., general foreman	4,171.34	.....
McFarland, James, chief clerk	4,598.40	45.05
McFarlane, R. T., street inspector	2,869.35	.50
McFarlane, R. T., street inspector .....	.....	* 21.52
McGahan, Albert, watchman	323.30	.....
McGahan, Virgil, mechanic	2,905.51	75.10
McGann, A. L., truck driver	1,546.10	.....
McGee, J. F., transitman	3,920.88	.....
McGee, W. Roy, section foreman	2,913.73	.....
McGee, William F., laborer	562.77	.....
McGilvery, D. G., truck driver	118.50	.....
McGilvery, N. B., laborer	156.00	.....
McGinnis, Webb, section foreman	2,813.08	.....
McGonegal, Zora O., man and team	773.00	.....
McGowan, John J., office assistant	1,193.33	.....
McGreer, E. G., section foreman	2,873.05	.....
McGrew, F. O., computer	3,470.40	.50
McGrew, F. O., computer .....	.....	* 4.90
McHugh, D. D., raker	2,231.53	.....
McIrvin, A. O., street inspector	3,097.05	.75
McIrvin, Dan E., laborer	259.50	.....
McKay, Paul, laborer	1,566.38	.....
McKay, R. W., truck driver	848.38	.....
McKenzie, Chester A., section foreman helper	2,448.90	.....
McKenzie, Richard L., motor grader operator	1,519.98	.....
McKenzie, S. C., motor grader operator	2,401.53	.....
McKeown, Robert J., material inspector	1,655.53	7.25
McKinney, James, lineman	1,917.35	.....
McKinnon, Otis, section foreman	2,941.45	.....
McLeod, Walter, section foreman	2,513.42	.....
McManus, Albert, gate tender	2,230.00	.....
McMurren, J. S., truck driver	1,560.90	.....
McMurren, S. A., pilot car driver	1,283.00	.....
McNeil, Chester E., kettleman	453.31	.....
McNew, Fred G., laborer	701.00	.....
McPherson, James, mechanic	2,363.90	35.40
McReynolds, Lewis J., district maintenance officeman	3,470.40	.....
McReynolds, Ralph, mechanic	2,657.41	.....
Meeks, John M., section foreman	2,608.90	25.70
Meggitt, Ernie, bridgeman	1,005.60	.....
Meisel, Clair C., bridge inspector	4,076.72	1,011.30
Melchert, Harold, assistant blueprinter	514.25	.....

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Mellon, C. P., watchman	\$ 351.00	\$
Melson, Lewis B., assistant timekeeper	1,703.41	.75
Melton, Harry C., general foreman	3,931.38	40.65
Melton, Luther R., truck driver	2,376.55	46.80
Melville, John O., assistant carpenter	2,230.17	2.65
Menegat, Peter J., material inspector	2,648.72	3.90
Mercker, F. E., invoice clerk	3,690.24	4.85
Merchant, Ivan D., designer	5,212.91	14.35
Merrill, Elmer J., pitman	1,789.27	27.25
Merrill, W. B., transitman	3,920.88	39.20
Merriman, Guy, truck driver	1,970.15	.....
Merriman, Ted, rollerman	1,490.65	.....
Mershon, L. J., bridge foreman	3,805.53	11.15
Messenger, E. T., section foreman	2,872.46	.....
Messinger, George, laborer	705.00	.....
Messinger, S. K., truck driver	1,238.35	.....
Metcalf, Laurence, material inspector	558.32	1.15
Metts, B. O., laborer	1,584.90	.....
Meyer, F. W., laborer	2,144.50	.....
Meyer, O. W., miner	1,279.70	.....
Meyers, Fred E., section foreman	2,653.05	.....
Meyers, Walter E. truck driver	548.70	.....
Millard, S. G., section foreman	2,765.12	.....
Miller, Adolf, laborer	40.00	.....
Miller, Boyd E. tamperman	350.37	.....
Miller, Catherine D., typist	1,949.03	.....
Miller, Charles W., grader operator	1,635.00	.....
Miller, C. S., mechanic helper	2,435.32	.....
Miller, Earl H., blacksmith helper	2,570.40	16.15
Miller, Ellis D., section foreman helper	2,460.55	.....
Miller, George V., street inspector	2,892.60	11.05
Miller, Henry A., laborer	64.00	.....
Miller, Henry J., district maintenance superintendent	5,712.00	280.50
Miller, Howard F., laboratory assistant	976.12	.....
Miller, H. R., section foreman	2,824.40	15.75
Miller, Jesse, miner	558.35	.....
Miller, John W., laborer	724.50	.....
Miller, Joseph, mechanic	3,241.13	38.45
Miller, Joseph E., material inspector	1,836.56	3.65
Miller, J. G., section foreman helper	2,601.31	6.25
Miller, K. W., laborer	1,981.50	.....
Miller, Marvin E., truck driver	2,396.43	.....
Miller, M. L., truck driver	2,103.15	.....
Miller, Ralph T., laborer	2,283.70	.....
Miller, Victor B., chainman	2,400.00	95.05
Miller, Willard W., painter	2,454.65	.....
Miller, William H., section foreman	2,943.81	.....
Millering, C. H., district maintenance officeman	3,470.40	46.10
Millett, Frank, mechanic helper	2,486.39	.....
Million, C. L., section foreman helper	2,383.70	3.15
Mills, J. Emerson, laborer	2,372.82	.....
Mills, John, Jr., flushcoater	515.13	.....
Mills, William J., senior office assistant	441.07	.50
Milner, Morris H., office assistant	3,479.41	1.35
Miltenberger, Howard C., section foreman helper	2,382.50	.....
Miltenberger, O. C., truck driver	780.15	.....
Miltenberger, William O., raker	725.32	.....
Miner, Asbury, working foreman	3,037.89	3.90
Miner, Gilbert, park caretaker	2,646.00	.....
Minkewitz, W. J., assistant real property officeman	2,805.84	.....

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Minthorn, Walter, bridge foreman	\$3,802.52	\$ 10.65
Miranda, H. J., welder	2,836.78	.....
Mitchell, Ernest, lineman	464.68	.....
Mitchell, Truman, truck driver	903.48	.....
Mix, Noel, laborer	342.94	.....
Moen, John O., laborer	356.90	.....
Moffitt, J. W., laborer	90.75	.....
Moffitt, V. L., general foreman	4,086.28	2.95
Mollinet, R. E., transitman	4,630.34	88.30
Monda, Melvin H., timekeeper	3,075.11	.....
Monner, A. R., laborer	1,629.21	.....
Monroe, Clarence, laborer	1,679.45	.....
Monroe, Joe R., section foreman	2,680.93	.....
Monson, Agnes, stenographer	2,100.00	.....
Monson, Ann, stenographer	2,635.96	.....
Moon, Oris, truck driver	2,207.52	.....
Moore, Charles W., chairman	2,612.96	6.70
Moore, Ernest S., bridge foreman	3,747.60	.....
Moore, Frank, resident bridge engineer	5,156.96	41.95
Moore, Harry, laborer	440.00	.....
Moore, Homer, laborer	1,940.48	.....
Moore, M. W., bridge inspector	4,036.16	71.55
Moore, Roy, miner	774.60	.....
Moore, R. E., section foreman helper	2,331.02	.....
Morelock, J. E., resident engineer	4,561.76	29.85
Morgali, Gladys, assistant file clerk	2,071.54	.....
Morgan, Carl, laborer	83.50	.....
Morgan, C. O., laborer	1,125.80	1.60
Morgan, Frank D., draftsman	2,492.81	12.45
Morgan, Howard E., laborer	538.15	.....
Morgan, H. H., truck driver	1,299.95	5.50
Morgan, Louis L., laborer	233.40	.....
Morgan, M. M., flagman	203.25	.....
Morgan, William, working foreman	104.70	.....
Morisette, Clifford, pitman	1,294.65	.....
Morisette, George L., motor grader operator	3,600.55	3.35
Morisette, H., laborer	875.00	.....
Morris, D. A., truck driver	2,154.00	.....
Morris, H. G., section foreman helper	2,368.20	4.65
Morris, Jere, section foreman helper	2,486.75	.....
Morse, Fred W., truck driver	273.69	.....
Mortensen, Carl T., assistant carpenter	2,480.08	.....
Moser, August, mechanic	2,855.82	5.05
Mott, Guy H., foreman	3,570.40	.....
Mowers, Frank A., truck driver	1,212.17	.....
Muckridge, Frank O., motor grader operator	1,941.22	.....
Mudd, C. R., clerk	3,310.40	.....
Mulkey, Chester, paint machine operator	1,672.53	.....
Mulligan, Frank A., raker	805.28	.....
Mulligan, Peggy, stenographer	193.35	.....
Munford, Charles W., office assistant	1,181.61	.....
Munhollon, Harold C., laborer	2,317.60	.....
Munjar, Herman, laborer	1,391.60	.....
Munn, Ralph O., section foreman helper	2,527.80	3.80
Murphy, Wayne E., chairman	1,454.29	3.25
Murray, Owen, laborer	56.50	.....
Mutchler, James A., truck driver	587.85	13.55
Myers, Fred J., assistant manager financial survey	3,994.72	36.35
Myers, H. E., lineman	98.30	.....
Myers, James E. transitman	3,895.64	.....

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Nance, Troy, watchman	\$ 141.33	\$
Nantz, G. T., laborer	403.50	.....
Nash, E. M., general foreman	3,655.43	28.05
Nash, Jud, spotting foreman	1,419.29	.....
Nash, J. W., office assistant	5,483.52	67.65
Nash, Robert T., shoveler	845.46	.....
Neavoll, B. D., section foreman helper	2,476.40	.....
Nedrow, Jesse W., laborer	1,975.65	.....
Nedrow, L. H., caretaker	525.16	.....
Neilson, Fred A., cliff comber	1,281.05	.....
Nelson, James D., assistant cost analyst	2,950.74	220.50
Nelson, Leon H., computer	3,817.57	4.10
Nelson, Robert V., computer	3,525.64	20.30
Nettleton, William P., laborer	550.68	.....
Neukirchner, Jim, laborer	1,978.89	.....
Newell, M. H., section foreman helper	2,334.78	.....
Newman, W. H., bridge operator	1,374.57	.....
Ney, W. H., clerk	3,690.24	.....
Nicholas, Ernest M., section foreman helper	2,425.25	.....
Nichols, Fred R., raker	985.65	.....
Nichols, Otis A., section foreman helper	2,471.05	.....
Nichols, R. J., mechanic	2,805.43	.....
Nickson, L. E., bridge foreman	3,805.52	.....
Niemi, Jack, truck driver	2,403.21	.....
Neiswander, Frank, stockman	2,610.78	.....
Niles, F. W., chainman	2,436.55	.....
Noeske, Carl, chainman	3,163.95	.....
Noonchester, Myrtle A., stenographer	1,142.23	.....
Norberg, Oscar H., chainman	2,393.33	6.20
Norby, A. W., machinist	3,232.06	.....
Nordquist, Niels B., junior draftsman	2,425.87	.....
Nordyke, Homer, laboratory assistant	1,747.32	.....
Norman, I. B., flagman	547.21	.....
Norval, Clair, truck driver	1,070.44	.....
Nyberg, Karl H., clerk	2,068.38	.....
Nyhus, Alvin O., draftsman	2,141.71	.....
Nyhus, Ed, section foreman helper	2,399.75	.....
Oakes, John R., chainman	2,400.00	.50
Oakley, Lawrence W., tabulating machine operator	815.38	.....
O'Brien, Ted, watchman	2,269.79	.....
O'Callaghan, Patrick T., office assistant	1,351.51	.....
Odell, John M., bridgeman	2,266.95	.....
Odell, Rolland L., laborer	2,098.00	.....
Oden, J. R., laborer	245.00	.....
Oden, Leslie R., laborer	1,534.20	.....
Officer, Floyd L., laborer	186.80	.....
Offill, Glen, laborer	1,901.65	2.00
Oldenburg, A. E., working foreman	3,300.29	.....
Oldenburg, Henry, blacksmith helper	2,428.63	.....
Olesen, Hans O., laborer	2,010.50	.....
Olmsted, D. D., fireman	2,710.93	.....
Olsen, Bernard, truck driver	763.55	.....
Olson, Ernest N., stakeman	1,509.57	.....
Olsen, Frank W., truck driver	766.55	.....
Olsen, Helmer, section foreman	2,981.14	.....
Olson, Joe F., raker	860.06	.....
Olsen, John, motor grader operator	1,105.47	.....
Olsen, Louie, spotting foreman	1,733.77	.....
Olson, Manfred W., plant inspector	1,691.57	14.50
Olsen, P. J., section foreman helper	2,464.95	.....

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Olsen, R. R., section foreman helper	\$2,444.70	\$
Olson, Walter A., burnerman	526.58	.....
O'Neal, J. D., laborer	56.00	.....
O'Neil, Charles F., computer	3,470.40	.....
O'Neil, Virgil G., office assistant	4,598.40	3.15
Onstatt, Sterling F., laborer	1,404.85	.....
Opedal, Tom, draftsman	3,866.88	.....
Ordway, Leo, truck driver oiler	1,690.12	7.80
O'Rielly, Jerry S., truck driver	415.49	.....
Orvis, George T., section foreman	2,801.07	.....
Otis, Ralph G., chairman	2,390.00	.....
Ott, Albert, senior office assistant	1,664.03	1.80
Ott, Albert, senior office assistant .....	.....	* 96.68
Otten, George H., landscape engineer	6,638.36	539.55
Otterstrom, Albert, laborer	1,904.13	.....
Overdick, Alfred W., laborer	552.10	.....
Overton, George, laborer	321.25	.....
Owens, Ermal, storekeeper	4,653.20	39.60
Oxford, Clayborn O., laborer	551.46	.....
Paaso, Rueben, painter	22.40	.....
Pack, Harry, laborer	19.00	.....
Pack, Ray, laborer	19.00	.....
Pade, Fred A., traffic survey office assistant	1,906.66	.....
Page, O. F., laborer	239.50	.....
Painter, Robert I., rollerman	2,110.58	81.25
Paist, L. R., laborer	1,727.70	.....
Panger, Noah, timekeeper	1,402.36	.50
Pankey, Elmer T., laborer	1,321.50	.....
Parberry, J. J., laborer	1,859.83	.....
Park, Clarence W., truck driver	801.82	.....
Park, Ernest S., shoveler	1,427.87	.....
Park, Fay R., laborer	1,615.10	.....
Parker, Alfred, motor grader operator	2,351.64	.....
Parker, C. W., right of way agent	4,597.40	952.65
Parker, C. W., right of way agent .....	.....	* 19.32
Parker, John H., laborer	529.85	.....
Parker, Knox, laborer	14.00	.....
Parker, Wilbur, office assistant	1,664.03	* 77.72
Parker, D. B., material inspector	2,129.03	.....
Parks, Harry W., section foreman	2,913.47	2.55
Parmenter, Bud (Jerome), blacksmith	2,485.50	.....
Parsons, L. E., office assistant	5,712.00	.....
Parsons, Paul V., rollerman	2,187.75	.....
Parton, A. B., laborer	2,126.25	.....
Patterson, James B., section foreman	2,774.47	.....
Patton, Paul L., truck driver	1,740.36	.....
Patton, William R., radio technician	4,145.88	269.30
Paull, Alden A., laborer	305.80	.....
Paul, William H., automotive economist	1,066.94	80.55
Paulsen, C. E., street inspector	3,110.72	18.70
Paulsen, C. E., street inspector .....	.....	* 44.72
Paulus, Fred, laborer	940.73	7.95
Paxon, G. S., bridge engineer	10,022.40	601.60
Payne, Charles, bridgeman	1,445.67	.....
Payne, Irene V., stenographer	1,251.00	.....
Payton, O. C., laborer	246.50	.....
Pearce, Roy E., serviceman	2,348.98	.....
Pearl, John J., levelman	3,290.64	6.75
Pearl, Bill, Jr., bridgeman	2,157.75	.....

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Pease, Edwin, computer	\$3,700.18	\$ 8.15
Peck, J. E., resident engineer	5,712.00	186.90
Peebles, F. M., laborer	1,671.80	.....
Peek, Norman, sign crew foreman	3,239.04	703.90
Peer, Vern L., laborer	221.25	.....
Pemberton, W. Rex, rodman	1,556.61	35.40
Pemble, Roscoe W., laborer	1,201.50	.....
Pence, John T., plant foreman	1,438.20	3.55
Pennell, H. C., cliff comber foreman	2,296.88	.....
Perkins, B. L., laborer	301.27	.....
Perkins, George N., grader operator	2,184.10	.....
Perkins, Ruth, typist	1,112.26	.....
Perkins, V. E., bridge foreman	3,876.16	.....
Perkins, W. G., bridge foreman	3,876.16	16.05
Perry, Jasper, computer	3,832.31	.....
Peters, Claude, carpenter	2,480.94	.....
Peters, Klaus W., motor grader operator	1,519.40	2.60
Peters, Stanley, shoveler	332.40	.....
Peters, Walter C., laborer	386.49	.....
Peterson, Bruce S., truck driver	763.02	.....
Peterson, Carl A., resident engineer	5,712.00	.....
Peterson, Carl A., raker	1,144.35	.....
Peterson, Carl E., laborer	231.00	.....
Peterson, Fred, serviceman	2,617.42	1.00
Petite, James, truck driver	312.00	.....
Peugh, Vern R., mechanic	3,030.94	.....
Pfeiffer, Charles A., laborer	395.00	.....
Pfifer, Claude E., draftsman	3,920.88	.....
Phelps, J. A., locating engineer	5,156.96	234.50
Phillips, Gerald E., laborer	225.72	.....
Phillips, Tracy T., laborer	1,784.50	.....
Phillips, Walter, stockman	3,129.58	.....
Pillow, Curtis H., laborer	769.50	.....
Pinkerton, Don, laborer	93.00	.....
Piper, T. R., assistant carpenter	2,573.10	.....
Pittman, Fred L., section foreman	2,872.05	.....
Poetschat, George S., laborer	150.00	.....
Poole, Walter V., motor grader operator	1,516.30	.....
Pope, Glenn, truck driver	1,996.35	4.95
Pope, Ivan, truck driver	2,014.35	.....
Porter, Ralph K., laborer	176.50	.....
Porter, Rodrick L., transitman	3,920.88	.....
Posey, Lester, watchman	1,515.46	.....
Potter, Dorothy, stenographer	2,400.00	.....
Potter, Earl V., office assistant	1,453.33	.....
Pranger, H. H., truck driver	2,384.32	.....
Presley, Clifford, truck driver	1,714.00	.....
Presnall, Dwight H., flagman	772.37	.....
Price, Carl M., section foreman helper	2,497.83	.....
Price, William, laborer	337.00	.....
Probert, S. H., office engineer	10,022.40	121.45
Probstfield, Merritt M., material checker	2,353.88	9.10
Prock, Fay, laborer	914.10	.....
Prock, Vernon, truck driver	2,294.00	.....
Prout, Ray, section foreman helper	2,495.20	.....
Provost, F. L., truck driver	249.05	.....
Purcell, Frank, laborer	579.50	.....
Putnam, Alice, secretary	3,123.36	.....
Putnam, Joe H., section foreman	2,884.46	.....

LIST OF EMPLOYES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Quant, Andy C., laborer	\$ 961.35	\$ *16.00
Query, Floyd, district maintenance officeman	3,470.40	2.80
Query, Henry, timekeeper	1,935.94	.....
Rabens, Elmer R., sign crew foreman	3,082.68	929.55
Rafferty, J. V., truck driver	1,266.71	15.90
Ramsey, Leonard, section foreman helper	2,426.38	.....
Ramsey, Lowell, laborer	1,416.70	.....
Rands, Royal, laborer	1,832.40	.....
Rasché, Grayce M., stenographer	261.00	.....
Rasmussen, Donald J., laboratory assistant	3,470.00	.....
Rasor, J. M., laborer	2,023.75	.....
Ratzburg, Verne L., truck driver	641.70	.....
Rawls, Grady, truck driver	1,525.76	16.80
Rea, Edgar J., flagman	283.73	.....
Read, G. C., section foreman	2,938.30	.....
Ream, Art J., laborer	1,054.45	.....
Redding, Mike, truck driver	2,039.30	.....
Redell, Chas. R., laborer	84.15	.....
Redman, G. L., spotting foreman	682.88	.....
Redman, J. A., draftsman	3,920.88	.....
Reed, Leo V., computer	3,411.71	.....
Reed, W. F., rollerman	54.84	.....
Reeder, Harry B., head chainman	3,383.40	3.50
Reeder, John D., truck driver	2,266.45	6.20
Reeder, J. T., laborer	196.50	.....
Reeves, Myrtle, stenographer	2,555.00	.....
Reeves, Raymond, laborer	206.33	.....
Reeves, W. A., office engineer	6,811.20	55.20
Regnell, Walter B., material inspector	1,311.93	1.35
Reher, Alvin, stakeman	983.98	.....
Reigel, Adin, lineman	696.95	.....
Reisner, R. H., transitman	3,920.88	.....
Remington, C. J., truck driver	1,975.78	.....
Remington, Roy R., junior draftsman	1,183.14	.....
Remington, R. W., requisition clerk	3,920.82	.....
Reynvaan, Arthur C., section foreman helper	2,321.22	.....
Rheinsburg, Robert, truck driver	1,884.15	.....
Rhodes, John A., raker	1,245.45	.....
Rhodes, John W., chainman	2,143.33	.....
Richardson, A. Truman, laborer	2,124.38	2.05
Richardson, Edw. H., laborer	2,139.86	.....
Richardson, Elbert E., working foreman	2,233.87	.....
Richardson, Erven L., laborer	743.50	2.75
Richardson, Floyd, truck driver	2,239.70	.....
Ricketts, E. G., bridge testing engineer	6,035.68	739.80
Rickey, Esther M., secretary	3,009.96	.....
Riggs, Lois, telephone operator	2,310.00	.....
Riley, James M., laborer	1,960.28	.....
Ripley, G. R., bulldozer operator	883.65	.....
Rippie, Oscar, motor grader operator	2,273.15	.....
Risen, Edward, material inspector	2,635.49	38.85
Risen, Edward, material inspector .....	.....	* 32.79
Risley, Chas. A., grader operator	1,384.54	.....
Ritchie, Victor I., burnerman	245.03	.....
Ritchie, Florence, stenographer	127.85	.....
Ritz, Merle, truck driver	2,320.00	.....
Roake, Theo. C., designer	4,598.40	2.30
Roarke, W. D., section foreman helper	2,181.18	.....
Roberts, A. V., section foreman helper	2,680.10	18.00

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Roberts, Geo. W., mechanic	\$2,942.66	\$ 39.30
Roberts, Glenn E., resident engineer	5,712.00	11.40
Roberts, John, laborer	2,025.50	
Roberts, J. L., laborer	1,265.50	
Roberts, Kenneth C., transitman	3,922.31	.85
Roberts, Melvin, truck driver	1,061.01	
Roberts, Ray S., laborer	1,434.00	
Roberts, Walter J., laborer	1,901.50	
Robertson, James, section foreman helper	2,558.05	9.60
Robertson, L. E., section foreman	3,078.79	
Robertson, Paul, section foreman	2,848.27	
Robertson, Ralph E., truck driver	363.80	7.25
Robertson, Ralph I., truck driver	278.40	
Roblin, Charles D., assistant timekeeper	133.55	
Rockafellow, A. W., section foreman helper	2,694.45	
Rodabaugh, H. W., grader operator	1,166.85	
Rodgers, Dan C., foreman	3,105.69	
Roe, Clarence L., truck driver	2,089.42	2.90
Roe, H. E., laborer	508.70	
Rogers, George, truck driver	2,097.10	
Rohlwing, Ernest, truck driver	625.21	
Rohrbough, Darel D., transitman	3,804.67	
Rohrs, I. F., truck driver	927.98	
Rohwer, Delbert J., shoveler	223.65	
Roland, George W., section foreman	2,909.32	
Roper, Earl, section foreman helper	2,419.40	
Roscoe, Albert, watchman	1,673.26	
Rose, Ann, stenographer	2,505.00	
Rosebraugh, Vernon, chainman	1,800.54	
Rosecrans, Richard, office assistant	4,058.41	41.20
Ross, Alvin C., office assistant	3,685.38	334.20
Ross, Claude B., raker	1,716.66	
Ross, G. W., division office engineer	4,598.40	
Rother, George M., mechanic	3,022.50	
Rotrock, Kenneth D., truck driver	565.36	
Rounds, Tunis, laborer	1,136.45	
Roundtree, Frank, truck driver	2,169.00	
Ruble, Zelle, secretary	3,123.36	35.90
Ruggles, Charles A., laborer	1,980.85	
Rullman, Charles, right of way engineer	5,156.96	
Rupert, Ethel, secretary	3,123.36	
Rutherford, Harry N., material inspector	3,133.10	21.35
Ruzicka, F. J., truck driver	1,541.80	
Rykard, C. W., laborer	354.42	
Sabin, W. U., assistant carpenter	2,088.40	
Sacre, Lyle J., painter	2,633.10	1.80
Sage, D. J., district maintenance superintendent	4,503.94	231.00
Saindon, Eugene L., junior draftsman	2,413.81	
Saling, Earl F., engineer assistant	4,036.16	
Sanders, Ed A., laborer	1,993.50	
Sanford, V. P., laborer	945.20	
Sautesson, Robert, carpenter	577.20	
Saull, O. W., laborer	1,451.00	
Saunders, E. T., stake artist	12.00	
Savage, Patrick D., raker	1,189.96	
Sawyers, John J., powderman	1,153.66	
Sawyer, J. S., chainman	2,361.29	
Say, Harold B., director of travel information	7,760.56	459.50
Say, Harold B., director of travel information		* 12.48

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Scarborough, Roy C., section foreman	\$2,895.49	\$
Schannep, I. M., title examiner	5,628.52	142.38
Schertenlieb, Edwin F., section foreman	2,988.69	.....
Schevenius, Rudolph, motor grader operator	2,304.76	4.35
Schlegel, Sam, raker	1,338.48	.....
Schnebeck, Mathew M., raker	1,492.07	.....
Schneider, C. C., designer	4,598.40	7.55
Schoenwald, John, laborer	193.00	.....
Schoppert, Geo. A., traveling grader operator	2,413.62	.....
Schoppert, Guy, street foreman	1,842.89	8.14
Schram, F. F., storekeeper	2,740.96	.....
Schriver, Geo. W., material checker	617.42	7.20
Schrock, Enos H., laborer	254.65	.....
Schroeder, Homer A., chairman	2,668.85	139.97
Schroeder, Homer A., chairman .....	.....	* 76.61
Schurman, R. W., laborer	10.50	.....
Schwering, W. E., section foreman	2,897.35	9.00
Scobee, T. E., laborer	1,346.40	.....
Scotfield, Willard J., chairman	2,800.96	.....
Scorby, R. L., laborer	1,901.53	.....
Scott, Frances, laborer	131.11	.....
Scott, H. E., laborer	105.50	.....
Scott, John W., shoveler	623.26	.....
Scott, J. A., laborer	655.08	.....
Scott, J. H., resident engineer	5,712.00	.....
Scott, Lafe O., flagman	262.36	.....
Scroggins, Walt, laborer	219.04	.....
Scull, W. C., chairman	3,170.40	.....
Seaman, Owen F., chairman	2,864.84	19.65
Sears, H. C., bridgeman	1,941.81	.....
See, Keith L., truck driver	1,048.81	3.10
Seeley, C. C., district maintenance superintendent	5,712.00	321.50
Sellers, Joe, fireman	2,660.25	.....
Sellers, Victor E., truck driver	1,429.63	.....
Sellwood, Wm. A., flagman	557.01	.....
Semon, Frank E., material checker	283.28	.....
Senn, Ernest E., bridgeman	1,234.55	.....
Sessine, Isabelle, stenographer	2,310.00	.....
Shafer, Floyd, truck driver	920.10	.....
Shannon, Eldon, truck driver tender	2,340.65	.....
Shaver, B. W., laborer	1,869.40	.....
Shaw, A. C., chairman	2,400.00	.....
Shaw, Lloyd P., draftsman	3,920.88	.....
Shearer, Chester R., truck driver	1,513.24	.....
Sheldon, Clarence E., truck driver	1,790.76	6.70
Sheldon, Eleanor G., clerk	1,560.17	.....
Sheldon, E. R., rollerwoman	2,065.99	36.85
Sheldon, Howard G., truck driver	2,320.45	.....
Sheldon, Wm. A., flagman	1,247.31	.....
Sheldon, Geo. H., working foreman	1,977.90	.....
Shepflin, J., laborer	2,095.55	.....
Sherrett, Vernon C., bridge foreman	3,805.52	.....
Shields, L. S., designer	4,598.40	.....
Shindler, Marie, stenographer	1,600.00	.....
Shinkle, Frank, section foreman	2,714.17	.....
Shinn, Lowell E., invoice clerk	2,858.38	.....
Shipley, W. Kenneth, section foreman helper	2,578.09	.....
Shough, Guy, sign crew foreman	3,339.34	340.85
Shroyer, Gail R., section foreman	2,671.91	.....

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Sijota, Frank, bridge operator	\$2,640.00	\$
Sim, H., mechanic	3,218.83	100.65
Sim, Tom, general foreman	4,463.58	38.55
Simmons, Arden, lineman	654.41	
Simmons, Harold V., street inspector	2,746.34	9.60
Simms, S., transitman	3,920.88	48.35
Simon, Floyd H., assistant bridge foreman	3,131.04	4.30
Simons, Carl O., truck driver	554.77	
Simpson, H. B., draftsman	3,840.24	
Simpson, Jack, load spotter	419.41	
Simpson, Kirk, computer	3,446.42	
Simpson, Paul, district maintenance officeman	3,446.42	16.15
Simpson, Rockwell, chainman	2,576.66	2.50
Simpson, Tom, shovel operator	2,450.32	
Sims, Paul, truck driver	667.30	6.50
Sinclair, Hugh, truck driver	2,131.53	
Sinrod, Oscar, tunnelman	138.00	
Sipe, G. B. or Byrle, laborer	296.89	
Sipprell, Ralph B., office engineer	4,223.66	63.55
Skaggs, J. E., mechanic	3,344.81	
Skelley, E. A., chief draftsman	6,810.21	
Skelton, A. G., district maintenance superintendent	5,853.42	142.05
Skelton, J. T., resident bridge engineer	5,712.00	1.45
Slack, Addison W., laborer	1,556.13	
Slack, E. N., laborer	765.50	
Slaght, David C., transitman	3,927.43	117.49
Slaght, David C., transitman		*115.09
Slavens, C. C., resident engineer	5,712.00	52.10
Sleighter, Lee A., carpenter	2,695.70	
Sloss, J. W., paintman	315.60	
Slover, Clifford W., truck driver	739.67	
Sly, George T., laborer	1,257.65	
Small, Geo. W., motor grader operator	2,390.66	
Smiley, L. A., raker	784.29	
Smiley, Ray F., truck driver	665.37	
Smith, Adam A., laborer	70.50	
Smith, Alfred W., laborer	702.31	
Smith, Arthur B., laborer	72.00	
Smith, Basil D., bridgeman	1,166.70	
Smith, B. H., flagman	727.72	
Smith, Carl F., auditor	5,712.00	2.25
Smith, Chas. A., shovel operator	2,885.43	16.05
Smith, C. C., laborer	130.50	
Smith, Donald L., load spotter	513.04	
Smith, D. R., designer (bridge)	5,712.00	
Smith, Edward E., pull grader operator	2,220.50	
Smith, Elton, section foreman	2,790.30	51.50
Smith, Fred G., truck driver	62.08	
Smith, George W., section foreman	2,942.71	
Smith, Harry R., truck driver	1,589.45	2.50
Smith, H. G., construction engineer	10,022.40	865.90
Smith, J. E., boilerman	590.75	
Smith, Lee, acting section foreman	2,274.53	
Smith, Leon, rollerman	552.60	
Smith, L. R., surface foreman	2,167.34	
Smith, L. S., truck driver,	1,343.07	
Smith, Malcolm G., assistant cost analyst	3,367.37	357.55
Smith, Marvin, laborer	141.35	
Smith, R. M., division office engineer	4,741.62	112.05

* Private car mileage.

LIST OF EMPLOYES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Smith, Stanley G., laborer	\$ 676.60	\$
Smith, Walter R., pull grader operator	2,038.35	.....
Smitton, L. C., resident bridge engineer	5,156.96	.....
Smoot, Carl R., laborer	453.28	.....
Snider, Tom, truck driver	499.10	.....
Snider, Vernon C., bridgeman	1,216.00	.....
Snively, W. L., pull grader operator	139.00	.....
Snyder, C. C., laborer	351.00	.....
Snyder, Raymond, grader operator	2,040.50	.....
Snyder, R. E., laborer	246.50	.....
Soleim, Harold G., section foreman	2,927.59	4.25
Solomon, Vernon, grader operator	2,421.15	.....
Sonner, Bill, machinist	3,050.26	.....
Sorenson, Ed W., section foreman helper	2,467.40	.....
Sothman, Geo., district maintenance superintendent	5,712.00	250.00
South, Raymond E., laborer	1,912.90	.....
Southwick, F. B., man and team	991.05	.....
Spagle, L. A., park foreman	1,728.39	.....
Spagle, Ray A., raker	1,459.72	.....
Spang, S. G., truck driver	308.70	.....
Speaker, C. B., transitman	4,541.96	4.20
Spencer, Albert W., material inspector	2,661.36	70.60
Sperling, A. T., flagman	607.12	.....
Spicher, R. W., laborer	24.00	.....
Spinney, Arthur C., retort operator	2,789.45	.....
Spooner, Harold T., draftsman	3,920.88	58.15
Springer, C. G., chainman	1,596.77	.....
Spurlock, Milton W., section foreman helper	2,332.75	.....
Squires, W. C., laborer	1,112.93	.....
Staats, Henry R., draftsman	2,170.33	.....
Stamper, Claude, section foreman	2,606.58	.....
Stanbrough, Geo. K., truck driver	1,135.26	3.65
Stankavich, M. M., motor grader operator	2,070.76	.....
Stanley, Robert T., designer (bridge)	3,279.71	.....
Starbuck, Mary, revolving fund clerk	625.00	.....
Starkey, F. A., general foreman	4,227.08	25.70
Steele, Robert E., truck driver	259.95	.....
Steensen, P. M., section foreman helper	2,397.35	.....
Stein, Gilbert L., office assistant	926.67	.....
Steiner, David A., leverman	431.10	.....
Steinhauser, Chas., Jr., laborer	1,442.42	.....
Stephens, Roy, pull grader operator	1,751.00	.....
Stephenson, L. P., mechanic	2,067.22	.....
Stephenson, M., bridge construction engineer	7,129.12	988.80
Stevenson, Earl L., chainman	3,215.76	.....
Stevenson, Frank, carpenter	2,803.80	.....
Stevenson, Glen O., computer	1,370.00	8.40
Stewart, I. N., stockkeeper	3,530.24	.....
Stewart, Milo M., chainman	2,400.00	.....
Stewart, Rudolph, oiler driver	250.69	17.20
Stickney, Kenneth, shoveler	450.83	.....
Stiffler, W. W., assistant maintenance engineer	7,129.12	790.00
Stinnett, Chester L., culvert inspector	2,840.66	.50
Stobie, J. T., motor grader operator	2,186.68	4.20
Stockdale, John L., kettleman	439.06	.....
Stockhoff, Kenneth F., laborer	252.00	.....
Stockman, Leslie H., supervising mechanic	1,660.50	14.65
Stoddard, Clinton F., truck driver	2,494.04	2.95
Stoddard, Dana E., watchman	910.88	.....
Stoddard, Hugh P., night watchman	2,095.61	.....

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Stoddard, W. L., laborer	\$ 898.85	\$
Stone, Henry E., laborer	2,001.60	.....
Stone, W. V., man and team	209.70	.....
Stoner, Geo. B., chief operator Interstate bridge	3,680.00	.....
Storck, Virginia D., typist	131.61	.....
Stouder, Chester H., motor grader operator	2,284.07	.....
Stough, Ed, laborer	1,504.59	.....
Stout, John R., computer	3,657.68	.....
Stoutt, Paul, section foreman	2,825.85	.....
Stradford, Leroy H., laborer	450.19	.....
Stradford, Wm. J., truck driver	405.70	.....
Stradley, LeRoy, chainman	3,170.40	.....
Stratton, Lowell M., topographer	3,572.40	1.10
Stratton, L. D., laborer	90.50	.....
Straughan, Chas. W., chainman	1,711.94	.....
Stream, E. E., district maintenance officeman	3,469.40	14.35
Stretch, V. P., carpenter	2,080.33	.....
Stretch, W. R., timber inspector	3,125.10	.....
Strobel, Bill, truck driver	2,025.10	.....
Stroberg, Frank L., section foreman	2,499.65	.....
Strohmeyer, W. M., district maintenance superintendent	5,712.00	168.45
Struble, Gertie, stenographer	2,550.00	.....
Stryker, W. J., spotting foreman	788.60	.....
Stuart, Al, pull grader operator	1,412.75	3.50
Stuart, C. A., mechanic	3,024.77	10.60
Stults, Fred, section foreman	2,920.03	.....
Stump, Mitchell M., chainman	2,766.89	8.70
Stumpenhaus, L., sign crew foreman	3,071.44	998.05
Sturgeon, S. W., laborer	122.25	.....
Sturgis, Harry R., chainman	2,103.23	36.65
Sullivan, Ed, mechanic helper	2,459.79	.....
Sullivan, Frank, section foreman	2,975.47	9.30
Sullivan, Lawrence J., head chainman	3,271.49	4.10
Sutherland, Donald M., office assistant	1,635.80	.....
Sutherland, Geo. A., assistant bridge foreman	1,610.59	.....
Sutherland, Jess W., section foreman helper	2,550.43	.....
Svatos, Joe, foreman	2,690.40	5.80
Swacker, W. R., laborer	2,114.70	.....
Swaggard, Gerald, laborer	120.90	.....
Swanson, Leonard B., truck driver	1,523.80	.....
Swart, H. S., resident engineer	4,813.20	*86.93
Swearingen, E. J., tractor operator	801.30	.....
Swift, Dean, resident engineer	5,712.00	48.20
Swift, Kenneth, truck driver	115.40	.....
Tabor, A. C., park caretaker	2,042.40	.....
Talbott, C. V., mechanic	2,774.26	4.10
Talbott, E. A., apprentice raker	2,436.11	16.95
Talbott, Herschel V., leverman	2,448.25	18.60
Talbot, Wm. E., leverman	236.05	.....
Talent, Merle, laborer	132.00	.....
Talmadge, Ernest E., bridgeman	2,218.50	11.85
Tandy, C. W., computer	3,466.60	.....
Taylen, Ellis, pilot car driver	182.95	.....
Taylor, Al B., truck driver	2,025.73	.....
Taylor, Alfred E., laborer	80.03	.....
Taylor, D. B., stockman	2,742.62	.....
Taylor, G. Edwin, laborer	14.00	.....
Taylor, H. L., assistant carpenter	2,432.01	.....
Taylor, J. W., laborer	10.50	.....
Taylor, L. V., mechanic	2,271.98	.....

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Taylor, Paul, pull grader operator	\$1,912.61	\$ 2.45
Taylor, Robert M., sign crew helper	1,146.33	417.10
Taylor, Sam, section foreman	2,811.20	.....
Taylor, Wayne, sign shop foreman	3,176.34	831.60
Teague, Fred, laborer	1,919.10	.....
Teel, H. M., resident bridge engineer	4,598.40	.....
Telford, Thomas D., draftsman	3,143.32	3.20
Templer, Verne, lineman	692.55	.....
Terrell, W. R., laborer	10.00	.....
Terry, Meryl V., typist	1,120.00	.....
Terry, William O., bulldozer operator	3,210.85	12.15
Tetrick, Glen M., night watchman	873.00	.....
Tharp, A. J., machinist	3,221.67	.....
Tharp, O. I., mechanic	3,056.64	5.05
Theilen, Louis, laborer	2,204.73	2.95
Thielsen, Hans, sign shop painter	2,445.39	.....
Thissell, Henry, laborer	1,148.10	.....
Thomas, Carl F., section foreman	2,807.91	.....
Thomas, Herbert D., laborer	1,466.89	.....
Thomas, John A., section foreman	2,899.24	4.05
Thomas, Pete, truck driver	818.31	.....
Thomas, Verne, Jr., draftsman	1,260.00	.....
Thompson, Alexander, gate tender	2,061.29	.....
Thompson, Arnold, laborer	332.00	.....
Thompson, F. D., draftsman	3,920.88	418.75
Thompson, Tabb, transitman	3,920.88	8.25
Thornton, Chas. J., district maintenance officeman	3,121.45	3.20
Thorpe, Vernon R., computer	3,920.88	.50
Tilley, George, section foreman helper	2,486.43	.....
Todd, Fern H., tunnelman's helper	330.00	.....
Tollefson, Arthur L., laborer	590.50	.....
Tolvstad, Lester, rollerman	1,941.99	.....
Toney, James T., section foreman helper	2,444.45	.....
Tonole, Dominico Mac, laborer	392.49	.....
Toole, Jos. G., district maintenance superintendent	5,712.00	287.05
Toole, Niccole A., resident engineer	4,813.20	45.00
Tou Velle, F. L., commissioner .....	.....	463.55
Tou Velle, F. L., commissioner .....	.....	*49.40
Townsend, Clement, laborer	103.50	.....
Townsend, Watson, office engineer	5,712.00	.....
Tracey, Cleve G., man and team	28.80	.....
Travess, George, laborer	1,325.60	.....
Trevess, John, laborer	1,995.35	.....
Tresham, Harry, laborer	1,846.05	.....
Trueman, Frank E., laborer	2,020.44	.....
Trueman, G. H., laborer	1,974.28	.....
Trulove, Ernest, laborer	2,407.41	10.25
Tucker, Guy, mimeograph operator	1,915.23	.....
Tucker, Niles H., office assistant	930.00	.....
Tummonds, Ray, paint machine operator	1,996.60	.....
Turk, Lloyd R., laborer	1,522.96	.....
Turner, Monroe, laborer	1,656.75	.....
Turner, Vernon, chainman	2,327.90	5.25
Twidwell, Harry T., truck driver	1,284.13	9.55
Umphette, E. E., resident engineer	5,712.00	8.35
Umscheid, Guy, laborer	1,854.17	.....
Unger, Jack, truck driver	1,174.55	.....
Unruh, Doris, clerk	699.00	.....
Uppendahl, Walter F., mechanic	1,334.52	.....
Urlaub, Clara, clerk	2,070.00	.....

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Vagt, Robert, laborer	\$ 610.65	\$
Valade, Earl C., chainman	2,300.00	25.95
Van Cleave, Jack R., sign crew helper	1,832.20	619.95
Van Cleave, Kenneth, section foreman	2,745.10	.....
Vandehey, W. E., laborer	2,056.37	.....
Van Horn, Geo. W., blacksmith	2,895.42	.....
Van Orden, W. L., truck driver	2,226.88	.....
Van Scoy, Paul, assistant manager planning survey	7,157.60	56.65
Varner, W. H., truck driver	839.99	.....
Varnum, Dick, section foreman helper	2,462.25	.....
Vaughn, R. C., section foreman	2,905.60	7.85
Veley, G. H., laborer	1,207.50	.....
Versteeg, Earl, truck driver	39.60	.....
Vester, A. C., chainman	3,294.50	.....
Vicars, E. R., laborer	1,913.75	.....
Vincent, A. C., surface foreman	3,495.40	24.50
Vinson, A. G., clerk	2,825.96	.....
Vinyard, Sam R., man and team	61.20	.....
Voight, Fred, section foreman helper	2,633.23	.....
Volz, J. H., section foreman helper	2,509.47	.....
Waddell, Charles L., truck driver	1,791.73	.....
Waddell, Oscar H., retort operator	2,661.28	.....
Waddington, Andrew J., truck driver	1,735.95	4.55
Wagers, Ralph C., clerk	1,635.45	.....
Wagers, Robert V., office assistant	2,531.67	.....
Waggoner, Francis E., draftsman	3,835.88	20.40
Waggoner, O. L., section foreman	2,900.19	.....
Wagner, Clarence R., computer	3,804.11	.50
Wagner, C. L., mechanic	3,074.87	.....
Wahl, Arthur C., laborer	1,886.59	.....
Walker, Chas. J., motor grader operator	2,210.13	6.40
Walker, Ernest E., laborer	367.25	.....
Walker, J. D., district maintenance superintendent	5,712.00	523.20
Walker, Murray R., truck driver	1,534.70	.....
Walker, Noble A., laborer	1,624.69	.....
Walker, S. C., foreman	2,390.78	95.40
Wallace, E. W., laborer	1,585.23	.....
Wallace, L. T., mechanic	3,072.70	19.15
Waller, J. F., locating engineer	5,712.00	60.30
Waln, Kehne, plant inspector	2,705.13	68.35
Waln, Kehne, plant inspector .....	.....	*7.20
Walsh, Angus B., levelman	3,253.44	.....
Walsh, Priscilla, typist	66.67	.....
Walters, Samuel F., resident engineer	4,813.20	28.45
Walters, Samuel F., resident engineer .....	.....	*6.80
Walton, E. A., pull grader operator	2,108.46	1.35
Walton, James J., office man	4,411.16	249.13
Walton, James J., office man .....	.....	*136.96
Walton, J. L., laborer	1,929.61	.....
Wandling, E., tunnelman	84.00	.....
Ward, Ivan, truck driver	1,467.45	.....
Ward, V. L., motor grader operator	2,329.17	.....
Warfield, L. H., draftsman	3,920.88	19.00
Warner, Earl, section foreman helper	2,475.75	.....
Warner, James L., truck driver	1,444.46	.....
Warren, C. L., boilerman	668.89	.....
Warren, C. N., pitman laborer	135.68	.....
Warren, Harold T., pitman	193.60	.....
Warren, Marvin H., section foreman helper	2,350.70	.....
Warren, Merle, laborer	73.00	.....

* Private car mileage.

LIST OF EMPLOYES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Warren, Mervin C., laborer	\$ 921.35	\$
Waterhouse, Joseph E., draftsman	3,920.88	27.50
Waterhouse, Joseph E., draftsman		*3.36
Watkins, Ed, truck driver	1,854.48	
Watkins, Norman, truck driver	1,137.30	2.95
Watson, L. E., laborer	698.10	
Watson, L. P., laborer	2,229.15	
Weatherspoon, Henry, laborer	268.14	
Weaver, Clayton N., laborer	104.00	
Weaver, J. B., resident engineer	5,712.00	30.30
Webb, Wendel W., laborer	218.64	
Webber, Ray, labor regulation engineer	5,156.96	386.30
Weber, J. A., machine designer	5,369.28	209.80
Wechter, W. H., computer	3,902.88	7.30
Weckman, Theo., blacksmith	2,398.48	
Welch, Anona, secretary	2,775.00	
Welch, Carl, flagman	36.00	
Welch, M. E., timekeeper	699.18	
Welch, Pauline, secretary	3,123.36	
Wells, A. C., man and team	610.20	
Wells, D. C., right of way agent	3,664.03	741.90
Wells, John H., section foreman helper	2,551.50	
Welsh, Charles, laborer	1,996.70	
Welsh, Fred J., section foreman	2,885.12	
Welsh, Sam, truck driver	2,447.39	
Wengenrath, Otto, truck driver	953.89	
Werner, Maurice, sign shop painter	2,144.17	
Wesman, Earl W., laborer	1,957.65	
West, Fred M., paint machine operator	1,649.29	
Whaley, Frank, motor grader operator	2,138.83	
Whaley, Thomas Oness, rollerman	2,676.57	
Whaley, W. E., laborer	60.00	
Wheelhouse, Lester V., truck driver	685.45	
White, Arthur G., load spotter	436.17	
White, Dorr E., plant foreman	2,421.37	
White, Lloyd, truck driver	257.90	
White, O. A., laboratory technician	3,696.99	9.80
White, Paul C., truck driver	2,216.93	
White, Willie, pull grader operator	1,657.60	
Whiteis, Paul L., bridgeman	1,990.70	
Whitmore, P. P., resident engineer	5,712.00	
Whitsett, J. F., flagman	635.89	
Whittemore, Frank A., machinist	3,046.35	9.50
Whittenberg, J. E., laborer	342.55	
Wicklander, Amanda A., clerk	2,906.96	
Wickstrand, Art, laborer	349.27	
Widdows, W. O., assistant maintenance engineer	5,712.00	590.25
Wigle, Chas., tractor operator	303.70	
Wilberger, Melvin, laborer	820.65	8.70
Wilcox, Delbert, pull grader operator	449.85	
Wilcox, R. Ray, pull grader operator	965.55	
Wilcox, Henry, truck driver	399.65	
Wilcox, W. W., laborer	532.00	
Wilcoxon, John W., carpenter	1,332.80	
Wilcut, Oszro, motor grader operator	2,229.92	5.00
Wild, Alfred, section foreman	2,881.90	2.25
Wilkerson, L. M., blacksmith	2,735.13	
Wilkins, F. W., laborer	1,838.80	
Wilkins, George, blacksmith	2,809.62	1.50
Wilkins, Sam, lineman	1,370.78	

* Private car mileage.

LIST OF EMPLOYEES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Willard, Ray, apprentice raker	\$ 738.87	\$
Willet, A. C., laborer	1,178.30	.....
Wiley, L., assistant bridge operator	3,240.00	.....
Willford, Clarence F., laborer	214.78	.....
William, Frank E., bridgeman	994.95	7.50
Williams, A. J., park caretaker	105.00	.....
Williams, Bruce, laborer	36.85	.....
Williams, Burley E., laborer	67.00	.....
Williams, Clarence H., laborer	311.28	.....
Williams, Horace J., district maintenance officeman	3,470.40	28.95
Williams, Kenneth C., chainman	2,400.00	.....
Williams, Mabel T., clerk	2,280.00	.....
Williams, Marvin J., truck driver	2,321.25	.....
Williams, Ralph G., pitman	467.73	.....
Williams, Treva T., truck driver	1,911.95	.....
Williams, Warren A., boilerman	751.50	.....
Williams, Winston, burnerman	225.93	.....
Williams, W. C., division engineer	8,966.40	827.00
Williamson, Gail C., truck driver	1,155.35	.....
Williamson, J. A., laborer	14.00	.....
Willigan, L. O., laborer	801.24	.....
Willis, Charles V., section foreman	2,781.15	.....
Wilson, Henry G., section foreman	2,976.71	.....
Wilson, H. W., truck driver	1,575.99	.....
Wilson, J. E., section foreman	2,935.89	.....
Wilson, K. L., truck driver	1,663.12	.....
Wilson, Ray L., bridgeman	1,430.10	.....
Wilson, R. O., sectionman	2,854.16	.....
Wilson, Thomas H., timekeeper	3,616.60	9.20
Wilson, Thomas H., timekeeper .....	.....	191.68
Winebarger, Claude, shoveler	627.17	*164.24
Winkle, R. A., truck driver	2,309.81	.....
Winsor, Richard T., pull grader operator	2,072.65	4.05
Wise, Clarence V., laborer	1,976.80	.....
Wise, Guy C., section foreman	2,812.30	.....
Wise, Ralph J., laborer	166.00	.....
Withrow, R. E., laborer	34.00	.....
Witter, C. T., draftsman	4,253.52	.....
Witty, Ervan, truck driver	2,244.60	.....
Witty, Geo. O., paintman	1,216.13	.....
Witzel, Alwyn G., truck driver	260.40	.....
Wolfe, Victor D., chainman	3,420.40	.....
Wood, Geo. E., street inspector	3,212.19	20.75
Wood, Geo. W., stockman	2,734.96	.....
Wood, G. H., motor grader operator	2,206.93	.....
Wood, Hal T., laborer	80.00	.....
Wood, Myron C., office assistant	3,479.41	.....
Wooden, C. T., section foreman	2,923.97	.....
Woodley, Earle H., assistant carpenter	2,346.80	.....
Woodruff, H. L., laborer	83.00	.....
Woodward, Theo. G., laborer	469.44	.....
Woodriddle, Elmer, timber inspector helper	2,387.82	.95
Wooley, Chas. A., laborer	1,607.36	.....
Workman, L. W., section foreman	2,508.35	.....
Wright, Claude E., street inspector	3,118.90	.....
Wright, Curtis L., truck driver	1,878.15	4.15
Wright, Dean H., laborer	379.98	.....
Wright, George E., flagman	436.07	.....
Wright, J. O., laborer	323.68	.....

* Private car mileage.

LIST OF EMPLOYES—Continued

Name and Title	Amount Received	
	Salary	Expense Allowance
Wright, Roger, section foreman helper	\$1,926.97	\$
Wuonola, Nestor, section foreman helper	2,625.42	.....
Wyllie, Chas. P., bridge man	2,159.30	.....
Yale, James, truck driver	917.80	.....
Yale, McKinley, motor grader operator	2,262.50	.....
Yeager, G. M., assistant auditor	4,411.16	16.20
Yearout, Lloyd, shoveler	688.49	.....
Yeater, Paul J., draftsman	1,700.00	.....
Yeck, Lloyd, assistant carpenter	2,298.95	.....
Yerex, C. K., draftsman	3,660.21	.....
Yoachum, Arthur C., truck driver	867.47	.....
Yoast, Alfred, laborer	81.68	.....
Yoder, H. L., bridge foreman	3,549.04	.....
Yohn, Henry, tractor operator	1,109.75	.....
York, Albert L., chainman	1,196.77	4.05
Young, Calvin E., laborer	360.03	.....
Young, F. T., resident engineer	5,712.00	2.80
Young, Hilbert, transitman	3,772.98	.....
Young, Wayne, laborer	221.00	.....
Zaddach, Gilbert W., shovel operator	2,487.86	4.90
Zandofsky, John, laborer	2,021.45
Zeigler, Robert H., truck driver	220.00	5.10
Zook, Sam, truck driver	567.00

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